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UNITED STATES.

BACTERIOLOGICAL STUDY OF THE WATER SUPPLY OF SAN FRANCISCO, CAL.

SAN FRANCISCO, CAL., *November 6, 1895.*

SIR: The United States is interested in the general health of every portion of its vast domain, and the question of the supply of pure water has especial weight in a great seaport like San Francisco.

There have been questions raised about the purity of the supply of water of San Francisco, and you would add to the knowledge of the United States Government, and to that of our own citizens, if you would have a bacteriological and chemical analysis made of the sources of the water of this city.

In a conversation with Dr. John Godfrey, surgeon in charge of the United States marine hospital (at San Francisco), this question came up, and he said that a request from me, as mayor of the city, to the Surgeon-General of the United States Marine-Hospital Service might have the effect of authorizing Dr. M. J. Rosenau, who I am informed is competent and now present here, to make such an examination.

With high regards, I am, ADOLPH SUTRO, *Mayor.*

To the SURGEON-GENERAL OF THE
UNITED STATES MARINE-HOSPITAL SERVICE.

WASHINGTON, D. C., *November 23, 1895.*

SIR: In reply to your letter requesting that Passed Assistant Surgeon Rosenau be detailed to make a bacteriologic and chemic analysis of the water supply of your city, I have to state that it gives me great pleasure to grant your request. Passed Assistant Surgeon Rosenau has been instructed to commence at once a systematic bacteriological examination of the water supply, and on the completion of his work to make a full report thereon.

Respectfully, yours, WALTER WYMAN,
Supervising Surgeon-General U. S. M. H. S.

Hon. ADOLPH SUTRO, *Mayor of San Francisco, Cal.*

WASHINGTON, D. C., *November 23, 1895.*

Passed Assistant Surgeon M. J. ROSENAU, U. S. M. H. S., *San Francisco Quarantine, Angel Island, Cal.* (Through medical officer in command.)

SIR: * * * I have to inform you that Hon. Adolph Sutro, mayor of San Francisco, has requested that a chemic and bacteriologic examination be made of the water

supply of San Francisco by the Marine-Hospital Service. I have to inform you that you have been detailed for this duty. You will, so far as your duties at quarantine permit, make thorough bacteriologic examination of the general water supply of the city. It is not deemed necessary for you to make an examination of private wells—only those which furnish a public supply. It is not practicable for a chemic examination to be undertaken. The necessary apparatus and culture media have been sent you

On completion of your examination you will make a full report to the Bureau.

Respectfully, yours, WALTER WYMAN,

Supervising Surgeon-General U. S. M. H. S.

In accordance with the above correspondence, the following report has been prepared by Passed Assistant Surgeon M. J. Rosenau, U. S. M. H. S.:

SOURCES OF SUPPLY AND DISTRIBUTION.

The Spring Valley Water Company furnishes San Francisco most of its water. Its principal source is from three catch basins, made by damming conveniently shaped valleys, between 12 and 20 miles from the city, in San Mateo County. These three reservoirs are known, respectively, as Crystal Springs, San Andreas, and Pilarcitos. From each a pipe line leads to the city, thus making three water districts. These districts are irregularly shaped and discontinuous, owing to engineering difficulties. These three systems are connected in such a manner that the water from any one reservoir may be pumped to either of the other two districts. This fact negatives the importance of regarding the districts as separate—from a sanitary standpoint. Smaller reservoirs in the city are used more for the purpose of storage, in case of sudden increased demand by fire, or from accident, than for obtaining pressure. The flow is continuous.

The Visitacion Water Company supplies about 600 consumers in the southern section of the city. The source of this water is from 8 wells, sunk in Bay View Valley, on the outskirts of the city. Six of these wells are 150 feet deep, 1 is 180, the other 130 feet through sand and gravel. The wells do not flow spontaneously, and are fitted with deep-well pumps. They are known as artesian wells, but as they do not pass through an impervious stratum they do not comply with the original meaning of that term.

Wells.—From the best information at my command there are very few private wells for drinking and household purposes in the city.

METHODS.

Collecting.—It was the purpose at first to obtain samples from the head waters and reservoirs and follow them down. This being inexpedient the plan was abandoned, and the samples were, for the most part, taken from the water as it flowed from the taps in houses. All samples were collected by myself, with due precautions. Special care was exercised to select a tap that led directly from the main. This was always a matter of concern, for many of the houses in San Francisco have cisterns on the roofs, for the purpose of lessening the pressure, thus cheapening plumbing. Some of these tanks are open, affording a lodging place for flying particles, bird excrement, and other refuse. Even the closed ones are a nuisance and false economy. In all cases the tap was allowed to flow sufficiently long to clear the pipe before the sample was taken.

Qualitative examination.—For isolating fermentative organisms the method of Theobald Smith was found a great help.* About 5 cubic centimeters of the suspected water is planted in a fermentation tube, containing milk sugar, or grape sugar bouillon, and grown at 41.5°–42° C. for forty-eight hours. If fermentation occurs the growth thus obtained is planted upon milk sugar or grape sugar agar and grown at 37° C. for twenty-four to forty-eight hours, at the end of which time red colonies usually make their appearance. These red colonies are transplanted to blue litmus milk, and in case they cause coagulation are further studied for their morphological and biological characters. In several instances the colon bacillus was isolated by planting 0.5 cubic centimeters of the suspected water directly upon Wurtz milk sugar litmus agar and growing the plants at 41.5°-42° C. This slight modification of Smith's method has proven useful, not only for isolating suspicious organisms, but it is believed that it may be used to give a proximate idea of their number to the cubic centimeter. In case the above methods

* For this method, as well as for other valuable suggestions, I am indebted to Passed Assistant Surgeon J. J. Kinyoun, U. S. M. H. S.

failed to find fermenting organisms, the water was further studied upon gelatine and glycerine agar, with the result that in 7 samples 8 suspicious organisms were found. These all proved to be forms belonging to the group of proteus and resembling Proteus vulgaris. They all grow well at room temperature, also at 37°, but not at 41.5° C.

Quantitative examination.—The counting of the colonies was done immediately upon returning to the laboratory, and without delay. The counting was done in the usual manner in gelatine, by adding a measured amount of the water to each Petri dish. The average of 3 plates was taken as the result. The multiplication of Proteus colonies and the liquefaction of the gelatine in several instances spoiled the counts, a disadvantage of this medium over agar for this purpose.

SUMMARY AND CONCLUSIONS.

Thirty-six samples of the city's water were examined. They were collected from widely separated points, between December 4, 1895, and February 7, 1896. Fermenting organisms were isolated from 14 of the 36 samples; 8 of these 14 contained proteus, and the remaining 6 the colon bacillus. In all, 26 organisms were studied, and are recorded in detail. The frequent presence of fluorescing bacteria (in particular bacillus fluorescens liquefaciens), and the occasional appearance of the commoner mold fungi indicate the surface character of the water. In the San Andreas water both the colon bacillus and proteus were found. In the Pilarcitos water, also, both proteus and the colon organisms were isolated. In the Crystal Springs water only an occasional proteus was met with. That is, in only 2 samples of 17 examined were suspicious organisms isolated. The greater freedom from fermenting organisms enjoyed by this water is in accord with the control of the watershed, and indicates what may be accomplished in preventing contamination of the water, by excluding all habitation from the water basin. The Visitacion water was found to contain the colon bacillus.

Significance of the Proteus group.—The presence of proteus indicates fermenting processes, doubtless the decomposition of organic matter in the water. This organism is one of the most common and widely distributed putrefactive bacteria. Proteus was found in the samples from Crystal Springs, San Andreas, and Pilarcitos waters.

Significance of the Colon group.—The colon bacillus is an intestinal organism, and its presence in the water means contamination with alvine discharges—either of man or the lower animals. Concerning its meaning, I can not do better than quote Abbott:

"In the normal intestinal tract of all human beings and many other mammals, as well as associated with the specific disease producing bacterium in the intestines of typhoid fever patients, is an organism that is frequently found in polluted drinking waters, and whose presence is proof positive of pollution by either normal or diseased intestinal contents; and though efforts may result in failure to detect the specific bacillus of typhoid fever, the finding of the other organism, the bacterium coli commune, justifies one in expressing the opinion that the water under consideration has been polluted by intestinal evacuations from either human beings or animals. Waters so located as to be liable to such pollution can never be considered as other than a continuous source of danger to those using them."

This organism was found in samples from San Andreas, Pilarcitos, and Visitacion.

The fact that the colon bacillus was more readily isolated from the water after the heavy rains * and that fermentation at 41.5°-42° C. was also more frequent after the heavy rains than before would indicate soil washings as one of the sources of this organism in the water; but that its presence in the water is not alone the result of soil washings of pasture lands is indicated by a study of the typhoid fever records. Typhoid fever is a constant factor in San Francisco, as will be seen from Table I (*vide infra*); and, further, a study of the death rate † from this disease to rainfall shows a striking coincidence in several years, i. e., a marked rise in deaths following the first heavy rains. (See Table II.)

It is reasonable to suppose that the greater freedom from biological impurities of the Crystal Springs water is due to the control of the watershed. If this is also practicable in the case of the San Andreas and Pilarcitos water basins, their control would accomplish much toward purer water. If control of the watersheds is not practicable, attention is again called to the value of central sand filtration. A method which has proven itself of great practical value at Altona, Prussia, during the recent cholera epidemic, and later at Hamburg, where, since the installation of filtering beds, there has been a marked decrease in the number of cases and deaths from intestinal diseases, such as typhoid fever, diarrhea, and gastroenteritis.

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* 8.14 inches of rain fell in sixteen days—January 13-28, 1896.
† Only the deaths, and not the number of cases, are recorded.

The work in detail follows:

SAN ANDREAS WATER.

(College Hill District.)

In 6 samples of water from the San Andreas District fermenting organisms were isolated from three. Both proteus and the colon bacillus were found, the latter before and after the heavy rains.

SAMPLE No. I (December 12, 1895. From College Hill reservoir).—Ninety-five colonies to the cubic centimeter. Ferments milk-sugar bouillon 41.5°–42° C.

Bacillus a (belonging to the Proteus group. From gelatine).—A short rod, single, and in pairs and short chains; actively motile; grows well at room temperature and at 37° C., but not at 41.5° C.; liquefies gelatine slowly all along stab, with a zone of cloudiness near the surface and whitish precipitate at bottom; young colonies upon gelatine are pale and finely granular, become more irregular, darker, brownish yellow, soon liquefying and spreading with amœba-like processes; the bouillon causes a uniform cloudiness; cultures in gelatine and bouillon have a putrefactive odor and alkaline reaction; coagulates blue litmus milk with acid reaction in four days; upon potato grows as a yellowish, raised, moist membrane; trace of indol; causes fermentation in milk-sugar bouillon (2 per cent) with alkaline reaction; no CO_2, no H; on grape-sugar bouillon (1 per cent) causes fermentation with acid reaction; gas not determined.

Bacillus b (belonging to the Colon group. Red colony).—A short rod, with rounded ends, single, in pairs, and short chains; motile but not active; grows at 41.5°–42° C.; does not liquefy gelatine; colonies upon gelatine plate are variable; small ones are hyaline and spherical, the older ones are finely granular, irregular in outline, some spindle shaped, and a few concentrically striated; pale yellowish in color and darker in the center; causes bubbles in gelatine shake culture; grows in decidedly acid bouillon, producing a uniform cloudiness; no indol; upon potato produces a moist, thin, shining, scarcely visible layer; coagulates blue milk in seven days; acid reaction; ferments both milk sugar and grape sugar bouillon, producing an acid reaction, and CO_2 and H.

Bacillus c (belonging to the Colon group. Red colony).—A short bacillus, with rounded ends, exhibiting slight motility; mostly in pairs; does not liquefy gelatine; upon gelatine plates, young colonies are spherical, homogeneous, and refractive; older ones become darker, granular, with paler zone about periphery, and irregular in outline: causes bubbles in gelatine shake culture; grows at 41.5°–42° C., also in decidedly acid bouillon; in alkaline bouillon it causes uniform cloudiness and acid reaction; no indol; coagulates blue litmus milk with acid reaction in seven days; upon potato produces a moist, scanty, glazed layer; ferments milk-sugar bouillon, with acid reaction, and produces CO_2 and H; ferments grape-sugar bouillon, with acid reaction; no CO_2, no H.

Bacillus d (belongs to the Colon group. Red colony).—A short rod, with rounded ends; single, in pairs, and short rods; actively motile; does not liquefy gelatine; in gelatine plates colonies are hyaline and spherical, becoming granular, yellowish, darker in center, irregular in outline, some whetstone, and some marked in concentric zones. In gelatine shake culture causes bubbles; grows at 41.5° C., and in decidedly acid bouillon; uniform cloudiness in bouillon and decided odor; no indol; upon potato a moist, thin layer; coagulates blue milk in six days, with pink color; ferments 1 per cent grape-sugar bouillon, with acid reaction and production of H, but no CO_2; ferments 2 per cent milk-sugar bouillon, with acid reaction and production of both CO_2 and H.

Bacillus e (belongs to the Colon group. Red colony).—A short bacillus with rounded ends; single, in pairs, and short rods; motile, but not active; does not liquefy gelatine; causes bubbles in gelatine shake cultures and in gelatine stab cultures; colonies in gelatine plates are hyaline and spherical, becoming granular and irregular in outline; grows at 41.5°–42° C., and also in decidedly acid media; in bouillon causes a diffused cloudiness and acid reaction; upon potato, grows as a moist, scanty, grayish layer; blue litmus milk is coagulated, with acid reaction in eight days; ferments grape-sugar bouillon, with acid reaction; no CO_2; no H.

Bacillus f (belongs to the Colon group. Red colony).—A short bacillus, with rounded ends; single, in pairs, and short rods; slight motility; does not liquefy gelatine; colonies in gelatine are hyaline and round; larger ones are granular, irregular, darker in center; distinct edge; causes bubbles in gelatine shake cultures; grows at 41.5° C. and in decidedly acid bouillon; in alkaline bouillon causes a diffused cloudiness and acid reaction; upon potato produces a moist, scarcely visible layer; blue litmus milk is coagulated and turned acid in eight days; no indol; ferments milk-sugar bouillon, with acid reaction, and production of CO_2 and H.

SAMPLE No. II (December 21, 1895. From tap at northwest corner Ellis and Jones streets. College Hill District).—Eighty-one colonies to the cubic centimeter. Not studied further.

SAMPLE No. III (January 8, 1896. From tap at 517 Jones street. College Hill District).—Eight hundred and sixty colonies to the cubic centimeter. Does not ferment grape-sugar bouillon at 41.5°-42° C.

SAMPLE No. IV (January 15, 1896. From tap at 124 Turk street. College Hill District).—720 colonies to the cubic centimeter. Does not ferment milk sugar or grape sugar bouillon at 41.5°–42° C.

SAMPLE No. V (January 29, 1896. From tap at 115 Jones street. College Hill District).

Bacillus g (belongs to the Colon group. Red colony).—A short rod, with rounded ends, mostly in pairs; a few short chains; motile, but not active; does not liquefy gelatine; colonies upon gelatine plate are yellowish brown, coarsely granular, and broken-glass appearance; young colonies are rounded, larger, are irregular in outline, and some have wavy striations; causes bubbles in gelatine shake cultures; grows in decidedly acid media; diffused cloudiness in bouillon; no odor; upon potatoes a moist, grayish white, elevated layer; coagulates and turns blue litmus milk pink in four days; no indol; ferments grape-sugar bouillon, with acid reaction and production of CO_2 and H; ferments grape-sugar bouillon, with acid reaction, but gas does not respond to tests for CO_2 or H.

SAMPLE No. VI (January 29, 1896. From tap at 324 Grant avenue. College Hill District).—Four hundred and forty colonies to the cubic centimeter. Ferments grape-sugar bouillon at 41.5°–42° C.; does not ferment milk-sugar bouillon at the same temperature.

Bacillus h (belongs to the Colon group. Red colony).—A short rod, with rounded ends; mostly in pairs; a few short chains; very slight motility; does not liquefy gelatine; colonies in gelatine; deeper colonies are brownish, granular, darker in center, and irregular in outline; some spindle shaped; surface colonies are paler, finely granular, and irregularly shaped; causes bubbles in both gelatine stab and shake cultures; grows at 41.5°–42° C., and in decidedly acid media; in bouillon a diffused cloudiness and alkaline reaction; no indol; upon potato a moist, thin, gray membrane; coagulates blue milk in five days; acid reaction; ferments both milk sugar and grape sugar bouillon, with acid reaction, and CO_2 and H.

Bacillus i (belongs to the Colon group. Red colony).—A short rod; rounded ends; mostly in pairs; doubtful motility; does not liquefy gelatine; colonies in gelatine are brownish yellow, mostly round, sharp edges, granular, and darker in center; surface colonies are pale, larger, irregular, and with a nucleus; causes bubbles in both gelatine stab and shake cultures; grows at 41.5°–42° C. and in acid media; diffused cloudiness in bouillon; upon potato produces a scanty, shining, dirty-gray layer; coagulates blue milk with acid reaction in two days at 41.5° C.; ferments milk-sugar bouillon, with acid reaction, and production of CO_2 and H; ferments grape-sugar bouillon, with acid reaction, and production of H, but no CO_2.

Bacillus j (belongs to the Colon group. Red colony).—A short rod, with rounded ends; single and in pairs; slight motility; does not liquefy gelatine; colonies in gelatine are mostly spherical, amber colored, granular, with distinct edge; some are pale yellow, irregular in outline, with darker centers; causes bubbles in gelatine shake culture; grows at 41.5°–42° C., and in acid bouillon; upon potato a grayish, thin, moist membrane; coagulates blue litmus milk, with strong acid reaction, in two days, at 41.5° C.; ferments grape-sugar bouillon, with acid reaction, and production of CO_2 and H; ferments milk-sugar bouillon, with acid reaction, and production of CO_2 and H.

PILARCITOS WATER.

(Laguna Honda and Upper Russian Hill Districts.)

Fermenting organisms were isolated from 7 of the 10 samples of water collected from the Pilarcitos districts. Proteus was found in 5 samples, the colon bacillus in 2 samples. The samples were collected, for the most part, before the heavy rains.

SAMPLE No. VII (December 4, 1895. From outside tap at 801 Sutton street. Laguna Honda District).—One hundred and twenty-six colonies to the cubic centimeter.

Bacillus k (belongs to the Proteus group. From gelatine.)—A short rod, single, in pairs, and short chains; actively motile, rapid progression, and undulating movements; grows well at room temperature and at 37° C., but not at 41.5° C.; liquefies gelatine all along stab; the liquefied gelatine has a characteristic appearance—a zone of cloudiness near the surface and an abundant precipitate at the bottom; young colonies in gelatine are brownish yellow, coarsely granular; liquefaction rapidly begins and spreads along the surface, with deposits in the center and granular zones arranged concentrically; in bouillon causes uniform cloudiness; cultures in gelatine and bouillon

have a strong putrid odor and alkaline reaction; upon potato a moist, grayish-white, thin layer; coagulates blue litmus milk, with pink color in two days; moderate amount of indol; ferments milk-sugar bouillon, with alkaline reaction, and production of CO_2 and H; also ferments grape-sugar bouillon.

SAMPLE No. VIII (December 8, 1895. From tap at 914½ Ellis street. Laguna Honda District).

Bacillus l (belongs to the Proteus group. From gelatine).—A short bacillus, with rounded ends; actively motile; grows well at room temperature and at 37° C., but not at 41.5° C.; liquefies gelatine; young colonies in gelatine are granular, irregular in outline, and darker in the center; soon begin to liquefy and spread; a white sediment in the center of each colony, and granular rings arranged about the periphery; small processes, like cilia all around the edge; liquefies gelatine all along puncture; liquefaction gradually extends to sides, with a zone of cloudiness at surface, and an abundant white sediment at bottom; diffused cloudiness in bouillon, with thin zoögleal scum on surface; cultures in bouillon and gelatine have an alkaline reaction and sweetish, putrid odor; trace of indol; upon potato produces a yellow, moist layer; milk is coagulated in five days; ferments grape-sugar bouillon, with acid reaction; gas not determined.

SAMPLE IX (December 12, 1896. From Laguna Honda).—One hundred and six colonies to the cubic centimeter; ferments at room temperature, but does not ferment either grape-sugar or milk-sugar bouillon at 41.5°–42° C.

Bacillus m (belongs to the Proteus group. From gelatine).—A short rod, with rounded ends; mostly in pairs; very actively motile; liquefies gelatine and sends out processes; young colonies upon gelatine become granular and irregular in outline; soon liquefy and spread with processes about the edge; granular deposits in center and arranged concentrically toward periphery; stab cultures in gelatine have the characteristic appearance of Proteus vulgaris; in bouillon produces a uniform cloudiness, with zoögleal mass at the surface; cultures in bouillon and gelatine have an offensive, putrid odor and alkaline reaction; considerable indol; upon potato a dry, gray-white, thin layer; coagulates blue litmus milk, with acid reaction, in five days at room temperature; ferments 1 per cent grape-sugar bouillon, with acid reaction; gas not determined; ferments 1 per cent milk-sugar bouillon, with acid reaction; and production of H, but no CO_2.

Bacillus n (belongs to the Proteus group. From gelatine).—A short rod, with rounded ends; single and in pairs; motile, but not active; liquefies; grows well at room temperature; and at 37° C., but not at 41.5° C.; colonies in gelatine are pale yellowish, becoming darker and granular; some begin to liquefy and spread; in gelatine stab cultures liquefaction occurs all along the puncture, extending to the sides; liquefied gelatine has a zone of cloudiness at the surface, and a white precipitate at the bottom; alkaline reaction; diffused cloudiness and acid reaction in bouillon; both bouillon and gelatine cultures have a putrid odor; upon potato a thin, moist, scanty layer; coagulates milk, with acid reaction, in eight days; ferments both milk sugar and grape sugar bouillons, with acid reaction; gas not determined.

SAMPLE No. X (December 12, 1895. From Laguna Honda).—One hundred and eighty-four colonies to the cubic centimeter.

Bacillus o (belongs to the Proteus group. From gelatine).—A short rod; single pairs and short chains: rounded ends; actively motile; liquefies gelatine; colonies in gelatine are pale yellowish and granular, also round, dark brown with opaque centers; soon liquefies, with white deposit in center and granular zones toward periphery; spreading at edges; in gelatine stick culture liquefies like Proteus vulgaris; putrid odor and alkaline reaction; in bouillon, produces sweet, putrid odor, and acid reaction; no indol; upon potato a thin, moist, gray membrane; coagulates and decolorizes blue litmus milk in four days; ferments both milk sugar and grape sugar bouillons; acid reaction; gas not determined.

Bacillus p (belongs to the Proteus group. From gelatine).—A short rod; single and in pairs; very actively motile; liquefies gelatine; grows well at room temperature and at 37° C., but not at 41.5°–42° C.; colonies in gelatine have a yellowish-amber color, and mulberry shape; soon liquefy and spread; short processes about the edge; liquefies gelatine all along stab, with a zoögleal layer and cloudiness at the surface and sediment at bottom; also air bubbles along the sides; liquefies gelatine; has an alkaline reaction and putrefactive odor; diffused cloudiness in bouillon; no indol; upon potato scanty, glistening layer; causes a firm coagulum in blue milk in five days; ferments grape-sugar bouillon, with acid reaction; ferments milk-sugar bouillon, with acid reaction; the gas does not respond to tests for CO_2 or H.

SAMPLE No. XI (January 15, 1896. From tap at 412 Ashbury street. Laguna Honda District).—Four hundred and forty colonies to the cubic centimeter; does not ferment milk sugar or grape sugar bouillon at 41.5°–42° C.

Bacillus q (belongs to the Proteus group. From gelatine).—A short bacillus, with rounded ends; actively motile; liquefies gelatine; grows well at room temperature adn at 37° C., but not at 41.5° C. Colonies in gelatine are yellowish brown, granular, and round; become darker in center; short processes about edge; soon liquefy and spread; liquefies all along stab in gelatine; diffused cloudiness in bouillon; liquefies gelatine, and bouillon cultures are alkaline in reaction and have a putrefactive odor; no indol; upon potato scanty, moist, gray-white membrane; coagulates blue milk, with pink color, in five days; ferments grape-sugar bouillon, with acid reaction, and CO_2 and H; ferments milk-sugar bouillon, with acid reaction; gas does not answer to tests for CO_2 or H.

SAMPLE No. XII (February 7, 1896. From tap at 914½ Ellis street. Laguna Honda District.)—Three hundred and fifty colonies to the cubic centimeter; does not cause fermentation at 41.5°–42° C; not studied further.

SAMPLE No. XIII (December 12, 1895. From Upper Russian Hill Reservoir).—One hundred and forty-three colonies to the cubic centimeter.

Bacillus r (belongs to the Colon group).—A short rod; single, but mostly in pairs; rounded ends; very slight or no movements; does not liquefy gelatine; colonies on gelatine are pale hyaline, and larger ones are finely granular, darker in center, irregular in outline; uniform cloudiness in bouillon; causes bubbles in gelatine shake culture; no indol; upon potato produces a moist, yellow, raised membrane; grows well in acid bouillon; causes coagulation of blue litmus milk, with pink color, in fourteen days; ferments milk-sugar bouillon, with acid reaction; no CO_2; no H; ferments grape-sugar bouillon, with acid reaction; gas not determined.

SAMPLE No. XIV (December 21, 1895. From tap at 411 Greenwich street. Upper Russian Hill District).—Two hundred and thirty colonies to the cubic centimeter; ferments grape-sugar bouillon at 41.5°–42° C. Diligent search through many plates failed to isolate the fermenting cause.

SAMPLE No. XV (December 21, 1895. From tap at southwest corner Lombard and Dupont streets. Upper Russian Hill District).—One hundred and thirteen colonies to the cubic centimeter. Not studied further.

SAMPLE No. XVI (December 21, 1895. From tap at 1414 Dupont street. Upper Russian Hill District).

Bacillus s (belongs to the Colon group. Red colony).—A short rod, with rounded ends; single, mostly in pairs; motile; does not liquefy gelatine; young colonies in gelatine are spherical, hyaline, and refractive. Larger ones are yellowish, granular, and darker in center, irregular in outline; causes bubbles in gelatine shake culture; grows at 41.5°–42° C., and in decidedly acid media; diffused cloudiness in bouillon, with thin zoöglea on the surface; trace of indol; upon potato dry, thin, dirty-gray layer; blue litmus milk is coagulated with acid reaction in eleven days; ferments milk-sugar bouillon, with acid reaction; ferments grape-sugar bouillon, with acid reaction, and production of CO_2 and H.

Bacillus t (belongs to the Colon group. Red colony).—A short rod, with rounded ends; single and in pairs; actively motile; does not liquefy; grows at 41.5°–42° C.; colonies in gelatine plates are homogeneous and refractive, and spherical when small; become granular, dark in center and irregular in outline; in gelatine shake culture causes bubbles; in bouillon, a diffused cloudiness; trace of indol; upon potato a moist, grayish-white layer; coagulates blue milk in five days, with strong acid reaction; ferments grape-sugar bouillon, acid reaction, and CO_2 and H; ferments milk-sugar bouillon; acid reaction; CO_2 and H.

Bacillus u (belongs to the Colon group. Red colony).—A short rod; single and pairs; motile; not very active; does not liquefy; grows at 41.5°–42° C.; colonies on agar are irregular in outline, granular, darker in center, some spindle shaped; causes bubbles in gelatine shake culture; in bouillon a diffused cloudiness, with zoögleal membrane on the surface; potato dry, thin, gray-white layer; coagulates blue milk in six days; ferments grape-sugar bouillon, with acid reaction, and CO_2 and H; ferments milk-sugar bouillon with acid reaction; gas not determined.

Bacillus v (belongs to the Colon group. Red colony).—A short rod; single, in pairs and short chains; rounded ends; very actively motile; does not liquefy; grows at 41.5°–42° C.; colonies in agar are granular, irregular in outline; sharply defined edges; some are elongated and darker in center; causes bubbles in gelatine shake culture; diffused cloudiness in bouillon, and thin scum on the surface; no odor; trace of indol; upon potato a yellow, moist, and elevated layer; coagulates blue milk in six days; ferments grape-sugar bouillon, with acid reaction, and CO_2 and H.

CRYSTAL SPRINGS WATER.

(University Mound, Clarendon Heights, Lafayette Square, and Clay Hill Districts.)

Of the 17 samples examined from this district, fermenting organisms were found in only two, and in both instances, proteus. These results correspond to the fact that the land draining this basin is all owned and controlled by the company and kept free of habitation.

SAMPLE No. XVII (December 12, 1895. From tap at 2324 Taylor street. University Mound District).—Four hundred and twenty-one colonies to the cubic centimeter; ferments at room temperature, but not at 41.5°–42° C.; nothing suspicious isolated.

SAMPLE No. XVIII (December 21, 1895. From tap at 175 Minna street).—Eight hundred and ninety-four colonies to the cubic centimeter; ferments at room temperature, but does not ferment either milk-sugar or grape-sugar bouillon at 41.5°–42° C.

Bacillus w (belongs to the Proteus group. From gelatine).—A short rod; pairs and short chains; active motility; rapid, progressive, and undulatory movements; colonies in gelatine are pale and yellowish granular, liquefying, and spreading with short processes about the edge; liquefies gelatine all along stab, like Proteus vulgaris, alkaline reaction; uniform cloudiness in bouillon; cultures in gelatine and bouillon have a putrefactive odor; no indol; upon potato a thin, dry, grayish layer; coagulates milk with a pink color in six days; ferments grape-sugar bouillon, with very acid reaction; gas not determined.

SAMPLE No. XIX (January 8, 1896. From tap at 705 Howard street. University Mound District).—One thousand six hundred and eighty colonies to the cubic centimeter; does not ferment milk-sugar bouillon at 41.5°–42° C.; no fermenting organisms isolated.

SAMPLE No. XX (from tap at 9 Everett street. University Mound District. January 8, 1896).—One thousand eight hundred and sixty colonies to the cubic centimeter; not studied further.

SAMPLE No. XXI (from 623 Natoma street. University Mound District. January 15, 1896).—Five hundred colonies to the cubic centimeter; ferments grape-sugar bouillon, but not milk-sugar bouillon at 41.5°–42° C.; many plates made and many organisms studied, but the fermenting cause was not isolated.

SAMPLE No. XXII (from 577 Minna street. University Mound District. January 16, 1896).—One thousand two hundred and eighty colonies to the cubic centimeter; ferments grape-sugar bouillon, but not milk-sugar bouillon at 41.5°–42° C.; the fermenting cause not isolated.

SAMPLE No. XXIII (January 29, 1896. From tap at 22½ Everett street. University Mound District).—Three hundred and fifty colonies to the cubic centimeter; ferments grape-sugar bouillon at 41.5°–42° C., but does not ferment milk-sugar bouillon at the same temperature.

Bacillus x (belongs to the Proteus group. Red colony).—A short bacillus; mostly in pairs; active motility; liquefies gelatine; grows at 41.5° C; colonies in gelatine are brownish, coarsely granular, liquefying, and spreading; younger colonies are paler and more irregular, with ciliated margins; soon liquefy and spread; liquefies gelatine all along puncture like Proteus vulgaris; decided odor; bouillon, uniform cloudiness; no indol; upon potato a moist, grayish, glistening membrane; coagulates blue milk; ferments milk-sugar bouillon, with acid reaction, and CO_2 and H; ferments grape-sugar bouillon, with acid reaction; gas not determined.

Bacillus y (belongs to the Proteus group. Red colony).—A short bacillus; motile; liquefies gelatine; grows at 41.5° C.; colonies upon gelatine are at first refractive and clear, become granular, striated brownish yellow, and give off amœba-like processes; causes a uniform cloudiness in bouillon; liquefies gelatine all along puncture; alkaline reaction; no indol; coagulates blue litmus milk in four days; ferments milk-sugar bouillon, acid reaction, and CO_2 and H; ferments grape-sugar bouillon, with acid reaction; gas not determined.

SAMPLE No. XXIV (February 2, 1896. From tap at 24 Hunt street. University Mound District).—Two thousand colonies to the cubic centimeter; does not ferment at 41.5°–42° C.

SAMPLE No. XXV (February 2, 1896. From tap at South San Francisco primary school. University Mound District).—Ferments both grape-sugar and milk-sugar bouillon at 41.5°–42° C. Diligent search through many plates failed to isolate the fermenting cause.

SAMPLE No. XXVI (February 7, 1896. From tap at 213 Tahama street. University Mound District).—Ferments both milk-sugar and grape-sugar bouillons at 41.5°–42° C. Fermenting cause not isolated.

SAMPLE No. XXVII (December 8, 1895. From outside tap at 1817 Jackson street. Lafayette Square and Clay Hill District).—Three hundred and thirteen colonies to the cubic centimeter. Not studied further.

SAMPLE No. XXVIII (December 21, 1895. From 1331 Washington street. Lafayette Square and Clay Hill District).—Five hundred and nine colonies to the cubic centimeter. Nothing suspicious.

SAMPLE No. XXIX (December 21, 1895. From 1334 Washington street. Lafayette Square and Clay Hill District).—One thousand three hundred and seventy-five colonies to the cubic centimeter. Nothing suspicious.

SAMPLE No. XXX (December 12, 1895. From 1226 Ashbury street. Clarendon Heights District).—One thousand eight hundred and seventy colonies to the cubic centimeter. Ferments neither milk-sugar nor grape-sugar bouillon at 41.5°–42° C.

SAMPLE No. XXXI (January 15, 1896. From tap at 121 Tremont street. Clarendon Heights District).—Does not ferment at 41.5°–42° C. Six hundred and fifty colonies to the cubic centimeter.

SAMPLE No. XXXII (January 15, 1896. From 741 Ashbury street. Clarendon Heights District).—Does not ferment either grape-sugar or milk-sugar bouillon at 41.50°–42° C.

SAMPLE No. XXXIII (January 15, 1896. From 117 Tremont street. Clarendon Heights District).—Eight hundred colonies to the cubic centimeter. Does not ferment either grape-sugar or milk-sugar bouillon at 41.5°–42° C.

VISITACION WATER.

The colon bacillus was found in 1 of the 3 samples of this water.

SAMPLE No. XXXIV (February 1, 1896. From tap at northwest corner Railroad and Twelfth avenue).—Five hundred and eighty-seven colonies to the cubic centimeter; ferments both milk-sugar and grape-sugar bouillon at 41.5°–42° C.; the fermenting cause not isolated. This water contains a bacillus which coagulates milk and produces red colonies on lactose litmus agar, and diffuses itself uniformly through the long arm of the fermentation tube, but does not cause fermentation. It grows well at 41.5°–42° C., and in other ways resembles bacterium coli communis.

SAMPLE No. XXXV (February 1, 1896. From tap at corner Thirteenth avenue and M street).—Ferments milk-sugar bouillon, but not grape-sugar bouillon, at 41.5°–42° C.

Bacillus z (belongs to the Colon group. Red colony).—A short bacillus, with rounded ends; in pairs and short rods; slight motility; does not liquefy; grows at 41.5° C.; colonies in gelatine are hyaline, refractive, and spherical when young; become granular, pale yellowish, and irregular in outline; causes bubbles in gelatine shake culture; grows in decidedly acid bouillon, causing diffused cloudiness; no indol; upon potato a moist, scanty, glistening membrane; coagulates blue milk, with acid reaction, in 5 days; ferments milk-sugar bouillon, with acid reaction, and CO_2 and H; ferments grape-sugar bouillon, with acid reaction, and CO_2 and H.

SAMPLE No. XXXVI (February 1, 1896. From 1182 Fifteenth avenue).—Two thousand colonies to the cubic centimeter; ferments milk-sugar bouillon at 41.5°–42° C., but does not ferment grape-sugar bouillon at the same temperature. Fermenting cause not isolated.

TABLE No. I.—*The mortality from typhoid fever at San Francisco, Cal., from 1870 to 1895.*

[Compiled from the reports of the Health Department.]

Years.	Deaths.	Population.	Per cent.	Years.	Deaths.	Population.	Per cent.
1869–70	69	†170,230	.00040	1882–83	137	‡250,000	.00055
1870–71	107	*172,750	.00062	1883–84	180	‡270,000	.00067
1871–72	104	*178,276	.00058	1884–85	138	‡270,000	.00051
1872–73	87	*188,323	.00046	1885–86	102	‡280,000	.00036
1873–74	80	*200,770	.00039	1886–87	145	‡300,000	.00048
1874–75	136	*230,132	.00059	1887–88	152	‡330,000	.00046
1875–76	161	*272,345	.00059	1888–89	138	‡330,000	.00041
1876–77	193	*300,000	.00064	1889–90	149	†300,000	.00049
1877–78	160	*300,000	.00053	1890–91	137	‡330,000	.00042
1878–79	121	*305,000	.00039	1891–92	113	‡330,000	.00034
1879–80	85	†234,520	.00036	1892–93	106	‡330,000	.00032
1880–81	87	†234,520	.00037	1893–94	114	‡330,000	.00035
1881–82	93	‡231,520	.00039	1894–95	123	‡330,000	.00037

*According to Sangley's City Directory. †United States Census. ‡Estimated by Health Department.

TABLE No. II.—*Showing the relation of typhoid fever to rainfall at San Francisco, Cal.*

[*a*, Deaths from typhoid fever. *b*, Precipitation.]

Years.	July.		August.		September.		October.		November.		December.	
	a	*b*	*a*	*b*	*a*	*b*	*a*	*b*	*a*	*b*	*a*	*b*
1882–83	9	.00	11	.00	9	.00	17	2.66	23	4.18	22	2.02
1883–84	15	.00	20	.00	15	.42	11	1.48	28	1.60	17	.92
1884–85	14	.00	8	.04	13	.13	19	2.55	12	.26	10	7.08
1885–86	6	.06	12	.00	10	.11	13	.72	9	11.78	6	4.99
1886–87	12	.23	19	.06	13	.01	21	1.48	11	.84	13	2.07
1887–88	6	.....	9	.01	9	.29	8	1.00	17	.99	25	3.34
1888–89	12	.01	10	.01	18	.98	13	.13	15	3.99	12	5.80
1889–90	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1890–91	17	.02	13	.00	11	.31	21	.00	14	.00	10	3.25
1891–92	18	.10	16	.02	7	.77	8	.04	11	.56	12	5.62
1892–93	13	.00	14	.00	5	.02	13	1.65	11	3.91	7	5.08
1893–94	10	.02	11	.00	10	.21	9	.16	16	4.18	10	2.25
1894–95	8	.00	13	.00	12	1.05	9	1.73	10	.88	20	9.01

Years.	January.		February.		March.		April.		May.		June.	
	a	*b*	*a*	*b*	*a*	*b*	*a*	*b*	*a*	*b*	*a*	*b*
1882–83	10	1.92	6	1.04	7	1.04	10	2.64	6	2.52	7	.01
1883–84	20	3.94	11	6.65	14	8.24	10	6.33	9	.23	10	2.57
1884–85	13	2.53	15	.30	9	1.01	10	3.17	10	.04	5	.19
1885–86	5	7.42	9	.24	7	2.07	12	5.28	7	.37	6	.01
1886–87	13	1.90	9	9.24	9	.84	6	.....	11	.06	.....	.07
1887–88	23	6.81	8	.94	6	3.60	13	.11	12	.38	16	.27
1888–89	6	1.28	10	.72	8	7.78	13	.96	12	2.17	9	.03
1889–90	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1890–91	13	.98	6	7.26	10	1.96	5	2.44	9	1.25	8	.11
1891–92	8	2.42	6	2.90	8	2.85	4	1.39	4	1.86	1	1.00
1892–93	4	3.08	5	2.75	3	4.08	4	10.30	3	.15	12	.03
1893–94	11	5.99	7	2.69	5	.60	5	.50	9	1.31	6	.56
1894–95	14	6.99	11	2.31	4	1.89	6	1.24	5	.60	11	.00

M. J. ROSENAU,
Passed Assistant Surgeon, U. S. M. H. S.

[Reports to the Supervising Surgeon-General United States Marine-Hospital Service.]

Two smallpox cases in Pensacola, Fla.

JACKSONVILLE, FLA., *March 31, 1896.*

SIR: You are hereby notified of the occurrence of a case of smallpox in Pensacola, Escambia County, Fla., on March 16, in the person of John Wilson, a negro, aged 32, who died of said disease on the following Saturday. All precautions observed. No further cases reported.

Yours, truly,

W. B. HENDERSON,
President State Board of Health.

PENSACOLA, FLA., *April 7, 1896.*

SIR: I have the honor to inform you of a second case of smallpox that has made its appearance in this city, and has been reported to the board of health by Drs. Herron and Anderson. The case has been sent to the pesthouse, and the house will be fumigated and effects of patient destroyed. The first case reported to you died.

Respectfully, yours,

J. WHITING HARGIS,
Acting Assistant Surgeon, U. S. M. H. S.

Smallpox in Memphis, Tenn.

MEMPHIS, TENN., *April 2, 1896.*

SIR: I have the honor to report concerning smallpox in this city that 26 cases and 3 suspects have been recorded during the month of March.

Respectfully, yours,

H. W. WICKES,
Assistant Surgeon, U. S. M. H. S.

Smallpox in Texas.

AUSTIN, TEX., *April 2, 1896.*

SIR: You are hereby informed that 1 case of smallpox has been reported to this office as existing in Sherman, Grayson County, this State. The origin of the disease is Louisiana (indirectly). Precautions taken: Quarantine, vaccination of all exposed, etc.

Respectfully, yours,

R. M. SWEARINGEN,
State Health Officer.

AUSTIN, TEX., *April 2, 1896.*

SIR: You are hereby informed that 10 cases of smallpox have been reported to this office as existing in Smith County, near Tyler, this State. The origin of the disease is Louisiana. One death had occurred prior to March 28. Precautions taken: Quarantine, vaccination of exposed, etc.

Respectfully, yours,

R. M. SWEARINGEN,
State Health Officer.

Second case of smallpox at Louisville, Ky.

LOUISVILLE, KY., *April 4, 1896.*

SIR: I have the honor to state that 1 case of smallpox was reported in this city during the past week. This person contracted disease through communication with case formerly reported.

Respectfully, yours,

W. P. MCINTOSH,
Passed Assistant Surgeon, U. S. M. H. S.

Report of contagious diseases at New Orleans.

NEW ORLEANS, LA., *April 4, 1896.*

SIR: I have the honor to report herewith a summary of contagious diseases, as reported in this city during the month of March, 1896, viz: Smallpox, 334 cases—23 white, 311 colored; diphtheria, 27 cases—24 white, 3 colored; scarlatina, 13 cases (all among whites).

Deaths.—Smallpox, 83—5 white, 78 colored; diphtheria, 4 (all among whites). No deaths from scarlatina.

I am indebted to Dr. Olliphant, president of the Louisiana State board of health, for the record of diseases included in the sanitary reports from this station.

Very respectfully,

HENRY W. SAWTELLE,
Surgeon, U. S. M. H. S.

Smallpox in the United States as reported to the Supervising Surgeon-General United States Marine-Hospital Service, December 26, 1895, to April 6, 1896.

Places.	Date.	Cases.	Deaths.	Remarks.
Alabama:				
Mobile	Mar. 11-Mar. 13	2		
Arizona:				
Hirshaw	Feb. 17	10		
Nogales	Jan. 6-Feb. 3	3		
Arkansas:				
Crittenden County	Jan. 19	24	5	
Faulkner County	Jan. 4-Feb. 8	27	4	
Monroe County	To Feb. 8	43		
Jacksonport	Mar. 17	4		
Lee County	To Feb. 8	12	3	
St. Francis County	do	16	6	
Pulaski County	do	4		
Widener	Jan. 4	1		
Surrounded Hill	do	1		
Connecticut:				
Middletown	Feb. 11	1		
New Haven	Feb. 8	1		
Florida:				
Pensacola	Mar. 18-Apr. 7	2	1	
Illinois:				
Cairo	Jan. 14-Feb. 15	15	2	
Chicago	Dec. 1-Dec. 31		2	
Du Quoin, Perry County	Feb. 24	8		
Indiana:				
Seymour	Jan. 29	1		
Kentucky:				
Louisville	Mar. 9-Apr. 4	2		
Paducah	Mar. 24-Mar. 31	1		
Louisiana:				
New Orleans	Dec. 21-Dec. 28	10	2	
	Dec. 28-Jan. 25	26	7	
	Jan. 25-Feb. 22	36	13	
	Feb. 22-Feb. 29	53	2	
	Feb. 29-Mar. 31	334	83	
Shreveport	Feb. 26-Mar. 20	16	1	
	Mar. 21-Mar. 28	1		
Maryland:				
Baltimore	Mar. 7-Mar. 14	1		
Michigan:				
Detroit	Dec. 14-Dec. 21			Smallpox reported.
	Dec. 21-Dec. 28	3	1	
	Dec. 28-Feb. 15	8	2	
	Feb. 22-Feb. 29	3	3	
	Mar. 1-Mar. 21	2	1	
Bay City	Mar. 7-Mar. 21			Do.
Imlay Township	Feb. 7-Mar. 21			Do.
Ionia Township	do			Do.
Greenbush Township	Feb. 15-Feb. 22			Do.
Rochester	Dec. 14-Dec. 21			Do.
Saginaw	Feb. 1-Mar. 21			Do.
Marine City	Mar. 7-Mar. 21			Do.
Riga Township	Feb. 1-Feb. 29			Do.
Missouri:				
Birds Point	Jan. 14			Do.
St. Louis	Jan. 21	1		
	Mar. 7-Mar. 14	1		
Lone Jack	Mar. 11	2		
New Madrid County	Mar. 11	37	8	
Nevada	Mar. 11	1		
Pleasant Hills	Mar. 11	33	4	
New Jersey:				
Newark	Jan. 1-Jan. 31		1	
New York:				
Brooklyn	Jan. 1-Jan. 31	2	1	
Ohio:				
Dayton	Feb. 27-Mar. 12		4	
	Mar. 19-Mar. 26	4		
Martins Ferry	Dec. 1-Dec. 28	139	3	
Pennsylvania:				
Knoxville	Dec. 17	1		
Brookville	Feb. 18	1		
Finleyville	Feb. 11	1		
Gilberton	Feb. 13	1		
Maltby	Feb. 17	1		
Tennessee:				
Fayette County	Jan. 1-Jan. 31	1		
	Feb. 1-Feb. 29	3	1	
Obion County	Jan. 1-Jan. 31	2		
	Feb. 1-Feb. 29	3		

Smallpox in the United States as reported to the Supervising Surgeon-General United States Marine-Hospital Service, December 26, 1895, to April 6, 1896—Continued.

Places.	Date.	Cases.	Deaths.	Remarks.
Tennessee—*Continued.*				
Memphis	Dec. 15-Dec. 31	17		
	Jan. 1-Jan. 31	21		
	Feb. 1-Feb. 29	19		
	Mar. 7-Mar. 28	17		
Shelby County	Dec. 15-Dec. 31	9		
	Jan. 1-Jan. 31	35		
	Feb. 1-Feb. 29	58	5	
Alamo	Dec. 15-Dec. 31	6		
Tipton County	Feb. 1-Feb. 29	27		
Texas:				
Center	Mar. 13	1		
Orange	Mar. 18	1		
El Paso	Mar. 4	1		
Houston	Feb. 1-Feb. 8	1		
Sherman	Apr. 2	1		
Smith County	Apr. 2	10	1	
Stevensville	Mar. 10	1		
Washington:				
Port Townsend Quarantine	Feb. 18-Feb. 26	3		
Wisconsin:				
Mukwonago	Feb. 6	1		
Waukesha	Feb. 6-Mar. 10	4		
Wausau	Dec. 28	1		

Report of immigration at New York for the week ended April 4, 1896.

OFFICE OF U. S. COMMISSIONER OF IMMIGRATION,
Port of New York, April 7, 1896.

Number of alien immigrants who arrived at this port during the week ended April 4, 1896; also names of vessels and ports from which they arrived.

Date.	Vessel.	Where from.	No. of immigrants from Russia.	No. of immigrants.
1896.				
Mar. 29	Steamship St. Louis	Southampton	7	486
Do	Steamship Umbria	Liverpool and Queenstown		430
Mar. 30	Steamship Oevenum	Lisbon and The Azores		153
Do	Steamship Massilia	Marseilles and Naples		1,179
Mar. 31	Steamship Venetia	Stettin	12	103
Do	Steamship Patria	Hamburg	688	925
Do	Steamship Bonn	Bremen	279	630
Do	Steamship La Bretagne	Havre	5	603
Apr. 2	Steamship Edam	Rotterdam and Boulogne	161	435
Do	Steamship Noordland	Antwerp	15	256
Do	Steamship Scotia	Hamburg	53	526
Do	Steamship Norwegian	Glasgow	22	82
Do	Steamship Majestic	Liverpool and Queenstown		870
Do	Steamship Spree	Bremen	11	295
Apr. 3	Steamship Dresden	do	370	850
Apr. 4	Steamship Hekla	Copenhagen		371
Do	Steamship St. Paul	Southampton	4	296
Do	Steamship Lucania	Liverpool and Queenstown	2	742
	Total		1,629	9,232

Dr. J. H. SENNER,
Commissioner of Immigration.

Report of immigration at Boston for the week ended April 4, 1896.

OFFICE OF U. S. COMMISSIONER OF IMMIGRATION,
Port of Boston, April 5, 1896.

Number of alien immigrants who arrived at this port during the week ended April 4, 1896; also names of vessels and ports from which they arrived.

Date.	Vessel.	Where from.	No. of immigrants from Russia.	No. of immigrants.
1896.				
Mar. 29	Steamship Boston	Yarmouth		225
Mar. 30	Steamship Barnstable	Kingston		3
Mar. 31	Steamship Armenian	Liverpool		1
Do	Schooner Blanche M. Thorbourn.	Jordan River		2
Do	Steamship Sagamore	Liverpool		1
Do	Steamship Scythia	Liverpool and Queenstown		303
April 1	Steamsnip Pro Patria	St. Pierre		1
April 2	Steamship Boston	Yarmouth		260
Do	Steamship Halifax	Halifax		84
April 3	Bark Sarah	St. Michaels		7
	Total			887

THOMAS F. DELHANTY,
Commissioner of Immigration.

Vessels arriving at, departing from, and remaining at United States quarantine stations.

DELAWARE BREAKWATER QUARANTINE.

Week ended April 4, 1896.

Five vessels inspected and passed.

PORT TOWNSEND QUARANTINE.

Week ended March 28, 1896.

Two vessels inspected and passed.

REEDY ISLAND QUARANTINE.

Week ended April 4, 1896.

Fifteen vessels inspected and passed.

SAN DIEGO QUARANTINE.

Week ended March 28, 1896.

Three vessels inspected and passed.

SOUTH ATLANTIC QUARANTINE.

Week ended March 28, 1896.

Name of vessel.	Date of arrival.	Where from.	Destination.	Treatment of vessel and cargo.	Date of dep'ture.
Am. sc. Haraldine*	Mar. 21	Habana	Savannah	Disinfected and held for observation.	

* Previously reported.

Seven vessels inspected and passed.

SUUTH ATLANTIC QUARANTINE—Continued.

Week ended April 4, 1896.

Name of vessel.	Date of arrival.	Where from.	Destination.	Treatment of vessel and cargo.	Date of dep'ture.
Am. sc. Haraldine*.....	Mar. 21	Habana	Savannah ...	Disinfected.....	Mar. 29

*Previously reported.

Four vessels inspected and passed.

SOUTHPORT QUARANTINE.

Week ended April 4, 1896.

Four vessels inspected and passed.

Reports of States and yearly and monthly reports of cities.

CONNECTICUT—*Meriden.*—Month of March, 1896. Estimated population, 28,500. Total deaths, 41, including phthisis pulmonalis, 5; enteric fever, 1, and scarlet fever, 1.

Westport.—Month of March, 1896. Estimated population, 4,000. Total deaths, 3. No deaths from contagious diseases.

GEORGIA—*Columbus.*—Month of March, 1896. Estimated population, white, 10,276; colored, 9,027; total, 19,303. Deaths, white, 7; colored, 20; total, 27, including phthisis pulmonalis, 5; scarlet fever, 2, and measles, 1.

ILLINOIS—*La Salle.*—Month of March, 1896. Estimated population, 10,750. Total deaths, 6, including 1 from phthisis pulmonalis.

MICHIGAN.—Week ended March 28, 1896. Reports to the State board of health, Lansing, from 54 observers, indicate that erysipelas increased, and diarrhea and pneumonia decreased in area of prevalence. Phthisis pulmonalis was reported present during the week at 242 places, scarlet fever at 35, measles at 32, enteric fever at 23, diphtheria at 18, whooping cough at 13, and smallpox at 6 places—Bay City, Detroit, Imlay Township, Ionia, Marine City, and Saginaw.

NEW JERSEY—*Newark.*—Month of January, 1896. Estimated population, 215,725. Total deaths, 459, including phthisis pulmonalis, 52; smallpox, 1; enteric fever, 5; scarlet fever, 2; diphtheria, 22; croup, 12; measles, 1, and whooping cough, 5.

Month of February, 1896. Total deaths, 489, including phthisis pulmonalis, 39; enteric fever, 1; scarlet fever, 1; diphtheria, 17; croup, 7, and whooping cough, 6.

Month of March, 1896. Total deaths, 364, including phthisis pulmonalis, 49; scarlet fever, 7; croup, 5; diphtheria, 15, and whooping cough, 1.

MONTANA—*Butte City.*—Month of March, 1896. Estimated population, 40,000. Total deaths, 34, including diphtheria, 3, and measles, 1.

NORTH CAROLINA.—Month of February, 1896. Reports to the State board of health from 27 towns having an aggregate population of 150,685 (white, 87,772; colored, 62,913). Deaths, white, 130; colored, 119;

total, 249, including phthisis pulmonalis, 50; enteric fever, 3; measles, 24, and whooping cough, 2.

PENNSYLVANIA—*Plymouth.*—Month of March, 1896. Estimated population, 9,344. Total deaths, 14, including 1 from diphtheria.

VIRGINIA—*Lynchburg.*—Month of March, 1896. Estimated population, 30,000. Deaths, white, 13; colored, 22; total, 35, including 4 from phthisis pulmonalis.

WISCONSIN—*Portage.*—Month of March, 1896. Estimated population, 6,000. Total deaths, 5, including 1 from enteric fever.

PUBLICATIONS RECEIVED.

Annual Report of the Board of Health of the City of Lynn, Mass. 1895.

Eleventh Annual Report of the Board of Health of the City of Hartford, Conn., year ended February 28, 1896.

Annual Report of the Health Department to the Mayor and City Council of Baltimore. 1895.

MORTALITY TABLE, CITIES OF THE UNITED STATES.

Cities.	Week ended.	Population, U. S. Census of 1890.	Total deaths from all causes.	Deaths from—										
				Phthisis pulmonalis.	Yellow fever.	Smallpox.	Varioloid.	Cholera.	Typhus fever.	Enteric fever.	Scarlet fever.	Diphtheria.	Measles.	Whooping cough.
Allegheny, Pa	Apr. 4	105,287	42	4	.....	.....	.....	.....	.....	.....	.....	.....	2	2
Ashtabula, Ohio	do	8,338	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Auburn, N. Y	Mar. 21	25,858	9	1	.....	.....	.....	.....	.....	.....	1	.....	.....	.....
Do	Mar. 28	25,858	10	.....	.....	.....	.....	.....	.....	.....	3	.....	.....	.....
Baltimore, Md	Apr. 4	434,439	187	21	.....	.....	.....	.....	.....	1	2	5	1	3
Battle Creek, Mich	do	13,197	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Belleville, Ill	Mar. 28	15,361	9	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Bennington, Vt	Apr. 4	6,391	0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Binghamton, N. Y	do	35,005	15	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Boston, Mass	do	448,477	261	26	.....	.....	.....	.....	.....	.....	8	10	.....	3
Bristol, Conn	Mar. 28	7,382	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do	Apr. 4	7,382	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Bristol, R. I	Mar. 28	5,478	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do	Apr. 4	5,478	5	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Brockton, Mass	Mar. 28	27,294	7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Brookline, Mass	do	12,103	2	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Brooklyn, N. Y	Apr. 4	806,343	468	44	.....	.....	.....	.....	.....	.....	2	17	10	1
Burlington, Vt	Mar. 14	14,590	9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do	Mar. 21	14,590	9	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....
Do	Mar. 28	14,590	7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Butler, Pa	Apr. 4	8,734	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cambridge, Mass	do	70,028	35	5	.....	.....	.....	.....	.....	1	.....	2	.....	.....
Carlisle, Pa	Mar. 28	7,620	6	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do	Apr. 4	7,620	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....
Charleston, S. C	Mar. 28	*54,955	†40	13	.....	.....	.....	.....	.....	.....	.....	.....	2	.....
Chicago, Ill	do	1,099,850	460	49	.....	.....	.....	.....	.....	13	1	9	2	2
Do	Apr. 4	1,099,850	488	50	.....	.....	.....	.....	.....	12	.....	13	.....	1
Cincinnati, Ohio	Apr. 3	296,908	123	21	.....	.....	.....	.....	.....	1	.....	.....	7	1
Cleveland, Ohio	Apr. 4	261,353	134	11	.....	.....	.....	.....	.....	7	.....	3	.....	1
Columbus, Ind	do	6,719	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Columbus, Ohio	do	88,150	22	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Council Bluffs, Iowa	Mar. 28	21,474	3	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Dedham, Mass	do	7,123	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Denver, Colo	do	106,713	27	8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Detroit, Mich	Apr. 4	205,876	85	2	.....	.....	.....	.....	.....	1	2	3	.....	.....
Dunkirk, N. Y	Mar. 21	9,416	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do	Mar. 28	9,416	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do	Apr. 4	9,416	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
El Paso, Tex	Mar. 28	10,338	0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Emporia, Kans	do	7,551	0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do	Apr. 4	7,551	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Erie, Pa	Apr. 3	40,634	10	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Fall River, Mass	Apr. 4	74,398	43	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Flint, Mich	do	9,803	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Fort Worth, Tex	Mar. 28	23,076	5	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Gloucester, Mass	do	24,651	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do	Apr. 4	24,651	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Grand Rapids, Mich	Mar. 28	60,278	12	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Haverhill, Mass	Apr. 4	27,412	10	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hoboken, N. J	Mar. 28	43,648	24	3	.....	.....	.....	.....	.....	.....	.....	2	.....	.....
Ironton, Ohio	Apr. 4	10,939	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Jacksonville, Fla	Mar. 28	17,201	4	1	.....	.....	.....	.....	.....	1	.....	.....	1	.....
Jamestown, N. Y	do	16,038	4	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....
Jersey City, N. J	Mar. 29	163,003	94	10	.....	.....	.....	.....	.....	3	1	6	4	2
Johnstown, Pa	Mar. 28	21,805	6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do	Apr. 4	21,805	11	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....
Kalamazoo, Mich	Mar. 28	17,853	7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do	Apr. 4	17,853	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Lawrence, Mass	Mar. 28	44,654	21	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	1
Leominster, Mass	Apr. 4	7,269	8	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Lowell, Mass	do	77,696	26	7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ludington, Mich	do	7,517	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Lynchburg, Va	do	19,709	8	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
McKeesport, Pa	Mar. 28	20,741	9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Manchester, N. H	do	44,126	19	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....
Manitowoc, Wis	do	7,710	4	.....	.....	.....	.....	.....	.....	.....	.....	3	.....	.....
Do	Apr. 4	7,710	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Marinette, Wis	Mar. 28	11,523	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Massillon, Ohio	do	10,092	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do	Apr. 4	10,092	0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Medford, Mass	do	11,079	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Memphis, Tenn	Mar. 28	64,495	28	6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

*Estimated population, white, 28,870; colored, 36,295. Total, 65,165. †White, 9; colored, 31.

MORTALITY TABLE, CITIES OF THE UNITED STATES—Continued.

Cities.	Week ended.	Population, U. S. Census of 1890.	Total deaths from all causes.	Deaths from—										
				Phthisis pulmonalis.	Yellow fever.	Smallpox.	Varioloid.	Cholera.	Typhus fever.	Enteric fever.	Scarlet fever.	Diphtheria.	Measles.	Whooping cough.
Millville, N. J.	Apr. 3	10,002	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Milwaukee, Wis.	Apr. 4	204,468	86	12	.....	.....	.....	.....	.....	.....	.....	2	.....	.....
Minneapolis, Minn.	Mar. 28	164,738	43	3	.....	.....	.....	.....	.....	1	.....	.....	.....	1
Do	Apr. 4	164,738	35	3	.....	.....	.....	.....	.....	1	.....	1	1	.....
Mobile, Ala.	Mar. 28	31,076	20	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Nashville, Tenn.	Apr. 4	76,168	44	4	.....	.....	.....	.....	.....	.....	1	.....	3	1
New Bedford, Mass.	do	40,733	23	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
New Brighton, N. Y.	Mar. 28	16,423	11	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Newburyport, Mass.	do	13,947	6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
New Haven, Conn.	Apr. 2	81,298	31	8	.....	.....	.....	.....	.....	.....	.....	2	1	.....
New Orleans, La.	Mar. 28	242,039	163	21	.....	16	.....	.....	.....	1	.....	1	1	.....
Newport, R. I.	Apr. 4	19,457	5	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....
Newton, Mass	Mar. 28	24,379	10	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do	Apr. 4	24,379	15	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....
New York, N. Y.	do	1,515,301	922	111	.....	.....	.....	.....	.....	6	14	19	23	9
Norristown, Pa.	do	19,791	6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
North Adams, Mass.	do	16,074	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Olean, N. Y.	Mar. 28	7,358	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Omaha, Nebr.	do	140,452	12	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Oneonta, N. Y.	Apr. 4	6,272	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ottumwa, Iowa	Mar. 28	14,001	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Paducah, Ky	Mar. 15	12,797	12	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do	Mar. 22	12,797	7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do	Mar. 29	12,797	11	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....
Petersburg, Va.	Mar. 31	22,680	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Philadelphia, Pa.	Mar. 28	1,046,964	525	54	.....	.....	.....	.....	.....	3	.....	17	10	3
Pittsfield, Mass.	Mar. 4	17,281	9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Poughkeepsie, N. Y.	Apr. 4	22,206	15	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Providence, R. I.	do	132,146	60	9	.....	.....	.....	.....	.....	1	1	2	.....	2
Pueblo, Colo.	Mar. 28	24,558	12	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	1
Racine, Wis.	Mar. 21	21,014	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do	Mar. 28	21,014	8	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....
Reading, Pa.	Apr. 6	58,661	20	3	.....	.....	.....	.....	.....	1	.....	1	.....	.....
Richmond, Va.	Mar. 28	81,388	49	2	.....	.....	.....	.....	.....	.....	.....	1	.....	.....
Do	Apr. 4	81,388	26	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
St. Louis, Mo.	do	451,770	199	27	.....	.....	.....	.....	.....	1	.....	.....	1	2
Salt Lake City, Utah	Mar. 28	44,843	10	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
San Diego, Cal.	do	16,159	5	1	.....	.....	.....	.....	.....	.....	1	.....	.....	.....
San Francisco, Cal.	do	298,997	106	19	.....	.....	.....	.....	.....	1	.....	.....	.....	.....
Scranton, Pa.	do	75,215	23	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....
Shreveport, La.	do	11,979	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sioux Falls, S. Dak.	do	10,177	0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Somerville, Mass.	Apr. 4	40,152	17	5	.....	.....	.....	.....	.....	.....	.....	2	.....	.....
Spokane, Wash.	Mar. 27	19,922	7	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....
Springfield, Mass.	Apr. 4	44,179	13	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sterling, Ill.	Mar. 28	5,824	2	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Superior, Wis.	do	11,983	8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Taunton, Mass.	Apr. 4	25,448	14	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Tiffin, Ohio	do	10,801	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Urbana, Ohio	do	6,510	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Utica, N. Y.	Mar. 28	44,007	15	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do	Apr. 4	44,007	11	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Waltham, Mass.	Mar. 28	18,707	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do	Apr. 4	18,707	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Warren, Ohio	Mar. 28	5,973	0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Washington, D. C.	do	230,392	115	13	.....	.....	.....	.....	.....	.....	1	1	6	.....
Do	Apr. 4	230,392	98	17	.....	.....	.....	.....	.....	.....	1	.....	3	.....
Wilmington, Del.	do	61,431	18	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Winona, Minn.	Mar. 21	18,208	7	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do	Mar. 28	18,208	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Woburn, Mass.	Mar. 7	13,499	6	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do	Mar. 14	13,499	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do	Mar. 21	13,499	3	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do	Mar. 28	13,499	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Yonkers, N. Y.	Apr. 3	32,033	19	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Youngstown, Ohio	Mar. 28	33,220	6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do	Apr. 4	33,220	6	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

Table of temperature and rainfall, week ended March 30, 1896.

[Received from Department of Agriculture, Weather Bureau.]

Locality.	Temperature in degrees Fahrenheit.			Rainfall in inches and hundredths.		
	Normal.	*Excess.	*Defic'ncy.	Normal.	Excess.	Deficiency.
Atlantic Coast:						
Eastport, Me	32		2	.93		.56
Portland, Me	34		4	.72	.26	
Northfield, Vt	29		7	.53	.11	
Boston, Mass	38		2	.87		.03
Vineyard Haven, Mass	40		1	1.05	.08	
Nantucket, Mass	36		1	.84	.11	
Woods Hole, Mass	37		3	1.05	.15	
Block Island, R. I.	38		3	.86	.20	
New Haven, Conn	38		4	.91	1.12	
Albany, N. Y	37		7	.56	.08	
New York, N. Y	41		6	.88	.25	
Harrisburg, Pa	40		2	.82	.06	
Philadelphia, Pa	42		2	.70	.33	
Atlantic City, N. J	41		5	.86	.97	
Baltimore, Md	45		2	.91	.27	
Washington, D. C	45		2	.91	.14	
Lynchburg, Va	49		1	.80	1.65	
Cape Henry, Va	47		2	1.17		.86
Norfolk, Va	50	0		1.08		.49
Charlotte, N. C	54		1	1.00		.87
Raleigh, N. C	50	1		.88		.21
Kittyhawk, N. C	48	1		1.21		1.11
Wilmington, N. C	56	0		.84		.75
Columbia, S. C	56	0		.91		.75
Charleston, S. C	59		1	.89		.89
Augusta, Ga	59	1		1.02		.84
Savannah, Ga	61	1		.84		.83
Jacksonville, Fla	64	2		.77		.59
Jupiter, Fla	71		1	.49		1.14
Key West, Fla	73		1	.24	.23	
Gulf States:						
Atlanta, Ga	55	1		1.16		.96
Tampa, Fla	66	3		.67		.27
Pensacola, Fla	63	0		1.12		.78
Mobile, Ala	62		1	1.72		1.26
Montgomery, Ala	60	3		1.38		.62
Meridian, Miss	56	7		1.31		.97
Vicksburg, Miss	61	3		1.45		1.44
New Orleans, La	65		1	1.20		1.09
Shreveport, La	62	3		1.05		1.05
Fort Smith, Ark	55	6		.84		.76
Little Rock, Ark	57	4		1.08		.96
Palestine, Tex	62	5		.91		.91
Galveston, Tex	65		1	.63		.63
San Antonio, Tex	65	1		.54		.53
Corpus Christi, Tex	66	0		.35		.35
Ohio Valley and Tennessee:						
Memphis, Tenn	58	3		1.31		1.13
Nashville, Tenn	52	2		1.12		.96
Chattanooga, Tenn	54	1		1.29		.77
Knoxville, Tenn	51	2		1.19	.48	
Louisville, Ky	49		2	.95	.74	
Indianapolis, Ind	44	2		.84		.25
Cincinnati, Ohio	46		1	.70	.53	
Columbus, Ohio	42	1		.68		.19
Parkersburg, W. Va	44	0		.77		.07
Pittsburg, Pa	41	0		.63	.27	
Lake Region:						
Oswego, N. Y	33		3	.56	.63	
Rochester, N. Y	34		2	.63	.54	
Buffalo, N. Y	33	0		.56	.93	
Erie, Pa	36	1		.63	.43	
Cleveland, Ohio	37	2		.62	.07	
Sandusky, Ohio	38	2		.56	.37	
Toledo, Ohio	38	3		.49	.32	
Detroit, Mich	37	1		.49	.19	
Lansing, Mich	33	3		.56		.11
Port Huron, Mich	32	2		.56	.05	
Alpena, Mich	28	4		.49		.12
Sault Ste. Marie, Mich	27		4	.35	.34	
Marquette, Mich	27	4		.42		.04
Green Bay, Wis	31	6		.49	.11	
Grand Haven, Mich	35	1		.56	.12	

*The figures in these columns represent the average daily departure.

Table of temperature and rainfall, week ended March 30, 1896—Continued.

Locality.	Temperature in degrees Fahrenheit.			Rainfall in inches and hundredths.		
	Normal.	*Excess.	*Defic'ncy.	Normal.	Excess.	Deficiency.
Lake Region—*Continued.*						
Milwaukee, Wis	34	4		.56	.85	
Chicago, Ill	36	4		.63		.37
Duluth, Minn	29	6		.42	.04	
Upper Mississippi Valley:						
St. Paul, Minn	34	4		.39	.76	
La Crosse, Wis	36	3		.42		.13
Dubuque, Iowa	39	4		.56		.35
Davenport, Iowa	40	5		.56		.37
Des Moines, Iowa	41	4		.39	.07	
Keokuk, Iowa	43	5		.49		.25
Springfield, Ill	44	2		.65		.32
Cairo, Ill	51	2		.85		.34
St. Louis, Mo	46	5		.84		.55
Missouri Valley:						
Columbia, Mo	46	6		.73		.71
Springfield, Mo	49	4		.76		.76
Kansas City, Mo	46	7		.49		.15
Wichita, Kans	47	10		.49		.49
Concordia, Kans	44	11		.42		.42
Omaha, Nebr	42	7		.45		.08
Sioux City, Iowa	38	4		.35		.29
Yankton, S. Dak	38	6		.39	.40	
Valentine, Nebr	38	9		.43		.30
Huron, S. Dak	36	7		.34	.64	
Pierre, S. Dak	37	10		.29		.05
Moorhead, Minn	27	7		.22	.31	
Bismarck, N. Dak	30	9		.31	.05	
Williston, N. Dak	31	4		.14	.70	
Rocky Mountain Region:						
Havre, Mont	36	5		.14	.09	
Helena, Mont	38	0		.19	.17	
Miles City, Mont	37	9		.19		.12
Rapid City, S. Dak	37	9		.32		.26
Spokane, Wash	44		2	.25		.24
Wallawalla, Wash	49		3	.43	.06	
Baker City, Oreg	39		1	.35	.02	
Winnemucca, Nev	43	0		.21	.46	
Salt Lake City, Utah	45	2		.47		.07
Lander, Wyo	36	5		.35	.12	
Cheyenne, Wyo	38	6		.21		.16
North Platte, Nebr	41	11		.24		.20
Denver, Colo	43	9		.28		.28
Pueblo, Colo	45	9		.14		.14
Dodge City, Kans	47	10		.25		.25
Oklahoma City, Okla	54	5		.70		.50
Abilene, Tex	59	6		.33		.33
Santa Fe, N. Mex	43	5		.14		.06
El Paso, Tex	59	6		.07		.07
Phœnix, Ariz	63	5		.11		.10
Pacific Coast:						
Port Angeles, Wash	43		2	.49		.04
Fort Canby, Wash	47		4	1.42		.23
Astoria, Oreg	50		5	1.26	.24	
Portland, Oreg	50		4	1.07		.35
Roseburg, Oreg	50		5	.66	.27	
Eureka, Cal	49					
Red Bluff, Cal	57		2	.66	.68	
Carson City, Nev	45	1		.28	.67	
Sacramento, Cal	57	1		.63	.41	
San Francisco, Cal	55	1		.63		.37
Fresno, Cal	58	1		.35	.09	
Los Angeles, Cal	58	4		.53	.46	
San Diego, Cal	58					
Yuma, Ariz	67	3		.03		.03

*The figures in these columns represent the average daily departure.

FOREIGN.

[Reports received from United States consuls through the Department of State and from other sources.]

Cholera and yellow fever as reported to the Supervising Surgeon-General United States Marine-Hospital Service, December 26, 1895, to April 6, 1896.

CHOLERA.

Places.	Date.	Cases.	Deaths.	Remarks.
Argentine Republic:				
Buenos Ayres	Dec. 21-Dec. 28	3	.....	
Austria-Hungary	Nov. 19-Dec. 2	43	25	From outbreak (August 23, 1895) to date 453 cases, 296 deaths.
	Dec. 10-Dec. 30	21	11	
	Dec. 31-Jan. 27	16	11	
Egypt:*				
Ahmadieh	Nov. 6-Nov. 12	25	22	
Ahu-el-Chekuk	Dec. 23-Jan. 4	2	1	
Alexandria	Dec. 24-Dec. 31	.....	1	
	Jan. 4	1	.....	
	Jan. 11-Jan. 22	14	11	
	Jan. 24-Jan. 29	7	6	
	Feb. 1-Feb. 25	.....	38	
Arnie	Jan. 12-Jan. 14	7	2	
	Jan. 25	.....	1	
Ayat	Jan. 15	1	1	
Bigalat	Nov. 4-Nov. 13	7	7	
Bossat	Jan. 6-Jan. 9	2	.....	
Bousrate	Nov. 4-Nov. 22	36	35	
Borachia	Nov. 20-Dec. 17	22	34	
	Jan. 2	2	2	
Cairo	Dec. 7-Dec. 11	1	2	
	Jan. 10-Jan. 11	1	1	
Charkieh	Dec. 30-Dec. 31	2	2	
	Jan. 11-Jan. 13	1	1	
Damietta	Nov. 7-Dec. 23	86	79	
El Daraksa	Nov. 7-Nov. 14	2	1	
El Kurdi	Nov. 4-Nov. 11	7	7	
	Dec. 29	1	1	
Ezbet el Berg	Nov. 7-Nov. 25	32	25	
Ezbet Khalafala Pacha	Nov. 7-Nov. 13	5	2	
Farascoor	Nov. 14-Dec. 22	48	39	
	Dec. 29-Jan. 7	2	2	
Hehya	Dec. 8-Dec. 13	.....	1	
Kafr el Battekh	Dec. 6-Dec. 24	22	17	
Kafr el Zoonar	Nov. 16-Nov. 20	4	2	
Kafr Galailah	Dec. 19-Dec. 24	6	5	
Kolonghil	Nov. 6-Nov. 9	1	1	
Mansurah	Nov. 21-Dec. 17	1	1	
	Dec. 29-Jan. 1	2	2	
Matarieh	Nov. 4-Nov. 22	20	20	
	Dec. 8	1	1	
Menzaleh	Nov. 4-Nov. 16	35	41	
Mit Chaddad	Jan. 7	1	.....	
Salamann	Nov. 8-Nov. 18	10	8	
San el Hagar	Jan. 2-Jan. 3	1	1	
Sawalem	Jan. 9-Jan. 27	1	1	
	Jan. 30	1	1	
Zarka	Dec. 6-Dec. 24	8	4	
	Dec. 29-Jan. 8	6	4	
Zagazig	Nov. 22-Dec. 18	6	4	
	Jan. 1-Jan. 11	3	3	
	Jan. 23-Jan. 25	2	2	
India:				
Bombay	Nov. 19-Dec. 24	.....	15	
	Jan. 14-Feb. 4	.....	8	
	Feb. 18-Feb. 25	.....	1	
Calcutta	Nov. 10-Dec. 28	.....	332	
	Dec. 28-Jan. 4	.....	41	
	Jan. 4-Jan. 31	.....	165	
	Feb. 1-Feb. 22	.....	187	
Japan:				
Yokohama	Nov. 8-Nov. 15	1	1	
Chiba Ken	Jan. 6-Jan. 25	20	13	
	Jan. 24-Feb. 16	23	16	

*To date of December 18, 1895, 1,056 cases of cholera, with 874 deaths, have been reported throughout Egypt.

Cholera and yellow fever, etc.—Continued.

CHOLERA—Continued.

Places.	Date.	Cases.	Deaths.	Remarks.
Japan—*Continued.*				
Ibaraki Ken	Jan. 24–Feb. 3	3	.....	
	Feb. 12–Feb. 15	.....	2	
Fukuoka Ken	Feb. 29	1	.....	
Morocco:				
Casa Blanca	Jan. 11	.....	.....	Cholera reported.
Mazagan	Jan. 11	.....	.....	Do.
Stellen	Dec. 15	.....	13	
Russia:				
Kiev (government)	Oct. 13–Nov. 11	156	64	
	Nov. 11–Dec. 21	52	24	
	Dec. 22–Jan. 11	10	5	
	Jan. 12–Jan. 25	12	14	
Orlov	Nov. 3–Dec. 7	17	6	
Orel (government)	Nov. 3–Dec. 7	17	6	
St. Petersburg	Nov. 16–Dec. 1	85	31	Cholerina.
	Dec. 1–Dec. 28	275	178	Do.
	Dec. 28–Jan. 11	79	43	
	Jan. 25–Feb. 15	15	13	
	Feb. 22–Mar. 7	.....	2	
St. Petersburg (government)	Nov. 17–Dec. 7	21	.....	
	Dec. 8–Dec. 28	27	11	
	Dec. 29–Jan. 11	8	8	
	Jan. 12–Jan. 25	3	.....	
	Feb. 1–Feb. 8	2	.....	
Volhynia (government)	Oct. 13–Nov. 10	2,297	952	
	Nov. 10–Nov. 30	609	294	
	Dec. 1–Dec. 14	104	55	
	Dec. 14–Dec. 28	24	12	
	Dec. 29–Jan. 11	.....	1	
Turkey:				
Constantinople	Dec. 17–Jan. 15	3	3	Reports dated January 21, 1896, state "about 1 death per week."
Brena	Jan. 17	.....	.....	Cholera reported.
Bitlis and Seert	Jan. 15–Jan. 20	11	7	
Diarbekir	Jan. 16	.....	.....	Cholera reported in 3 localities.
Gazran	Dec. 21–Jan. 14	67	42	

YELLOW FEVER.

Brazil:				
Ceara	Nov. 30	1	1	
	Dec. 24–Dec. 31	.....	4	
Rio de Janeiro	Nov. 9–Nov. 30	.....	43	
	Dec. 1–Dec. 28	.....	136	
	Dec. 28–Jan. 11	.....	190	
	Jan. 11–Feb. 1	.....	382	
	Feb. 1–Feb. 8	.....	111	
	Feb. 8–Feb. 22	.....	395	
Pernambuco	Nov. 1–Nov. 15	8	.....	
	Jan. 1–Jan. 31	5	3	
Cuba:				
Cienfuegos	Dec. 8–Dec. 22	.....	2	
	Dec. 29–Jan. 19	.....	5	
	Feb. 16–Feb. 23	.....	1	
Habana	Nov. 28–Dec. 19	40	14	
	Dec. 26–Jan. 2	7	3	In military hospital.
	Jan. 2–Mar. 28	40	14	
Santiago	Dec. 7–Dec. 21	.....	29	
	Dec. 21–Dec. 28	.....	12	
	Dec. 28–Jan. 4	.....	15	
	Jan. 4–Feb. 15	.....	47	
	Feb. 22–Feb. 29	.....	15	
	Mar. 1–Mar. 28	.....	15	
Sagua la Grande	Dec. 1–Dec. 21	43	3	
	Dec. 25–Jan. 25	31	6	
	Feb. 1–Feb. 15	8	.....	
	Mar. 13–Mar. 20	5	.....	
Mexico:				
Tuxpan	Jan. 11–Jan. 25	.....	4	
Puerto Rico:				
San Juan	Nov. 29–Dec. 20	63	23	
	Dec. 20–Jan. 17	104	24	

Cholera notes.

[Translated in this Bureau from the "Veröffentlichungen des Kaiserlichen Gesundheitsamtes," Berlin, March 18, 1896.]

RUSSIA.—Cases and deaths were reported to the medical department up to February 22, as follows: City of St. Petersburg, from February 1 to 22, 11 cases, 8 deaths; government of St. Petersburg, from February 1 to 8, 2 cases.

EAST INDIES—*Calcutta.*—From January 26 to February 8, 102 cholera deaths were reported.

Cholera.

NORWAY.—By official order of March 6, the Russian governments of Kiew and Volhynia are declared free of cholera.

EGYPT.—By resolution of the international council of health at Constantinople, Turkish pilgrim vessels from the Hedjaz are required to repair to the quarantine stations at Klazomena, near Smyrna, Beirut, or Tripolis, in Africa, where the pilgrims shall be disembarked, in order that their clothing and effects may be disinfected and the vessels themselves be put through a process of disinfection, the hold to be emptied of foul water, the latrines washed, the space between decks whitewashed, and the drinking-water supply renewed. At the Suez canal the said vessels shall take on board quarantine guards, as is done on vessels from Algiers and Morocco. These guards must have been five days in quarantine at Port Said. The pilgrim vessels must then repair to Djeddah without stopping at any intermediate port, and there undergo medical inspection. In the event of cholera breaking out on board at Djeddah or during the voyage, they shall immediately repair to Cameran for quarantine.

Quarantine against arrivals from Alexandria is now limited to measures of disinfection and a forty-eight hours' detention for observation.

PLAGUE.

SPANISH STRAITS ISLANDS.—According to advices of January 31 from Manilla, vessels from Hongkong which carry Chinese coolies shall be subject to four days' quarantine and other vessels from the same port to three days' quarantine of observation.

YELLOW FEVER.

SPAIN.—By royal order of February 18 the modified quarantine measures prescribed July 28, 1893, for arrivals at Vigo from infected ports of South America, are left in force; also for arrivals from said infected ports at Santander and Corunna.

By royal order of March 3 quarantine is ordered for arrivals from Buenos Ayres. All ports situated not more than 165 kilometers from Buenos Ayres are declared suspect.

PORTUGAL.—By ministerial proclamation of March 7 the port of Bahia is declared infected and all other ports of the province of Bahia suspect.

CHINA.

Report on the bubonic plague in Hongkong.

[Transmitted to this Office by the Surgeon-General United States Navy.]

HONGKONG, CHINA, *March 2, 1896.*

SIR: I have the honor to inform you respectfully that the plague has assumed epidemic proportions in this place since I have been here; that isolation of suspected individuals has ceased to be practiced; and that all bills of health of the port state its prevalence, giving details of the precautions taken in cases where important mail steamers are concerned. It is also very prevalent in Canton and high up West River.

At his request I cabled this fact to the marine-hospital inspector at Yokohama, on the 24th instant, the day after these measures went into effect here.

I would respectfully direct your attention to the fact that the virus of this disease seems fully as ineradicable as that of glanders from surroundings favorable to it, which I consider that a few of our large cities most probably extend. Hence, I think that the most careful measures for its exclusion should be insured by repeated inspections of all steamers reaching our country from southern China. I am informed that its prevalence at Amoy in the past year has been concealed for commercial reasons, but I do not know this to be an absolute fact.

I have seen nearly all of the cases admitted since the 3d ultimo, and have made partial examinations of many bodies dead of it, every facility being shown me by the acting colonel surgeon, Dr. J. M. Atkinson, and his assistant, Dr. J. A. Lawson, whose practical knowledge of this scourge is unexcelled. It is very fatal. With the exception of about a dozen mild cases that came about a month ago, at least 95 per cent of observed cases have died, and that usually within the first four days of illness. * * *

Very respectfully, W. F. ARNOLD, M. D.,
Passed Assistant Surgeon, United States Navy.

HON. SECRETARY OF THE NAVY.

CUBA.

Sanitary report from Santiago.

SANTIAGO DE CUBA, *March 28, 1896.*

SIR: I have the honor of submitting the following report on the sanitary condition of Santiago de Cuba for the two weeks ended on March 28:

Ninety deaths have been reported for that period, of which 8 were from yellow fever, 12 from tuberculosis, 3 from croup, 2 from typhomalaria, 15 from enteric fever, 10 from pernicious fever, 3 from pneumonia, and the rest from diseases, acute and chronic, of noncontagious character.

Smallpox has commenced to spread to an alarming degree. The local authorities are taking measures to prevent the disease from spreading and becoming epidemic, as it is in Manzanillo and other towns. A hospital has been prepared outside the city limits and several cases are under treatment there, and vaccination is daily practiced, the number of children already vaccinated reaching up to about 2,000.

It is impossible to find out the number of cases in the town, as the poorer classes don't call in the regular physicians to attend their sick. * * * So far, the cases reported have ended favorably, but as the

warm weather sets in we will have bad cases, as it always happens with us.

We have few soldiers in our town just now, and that accounts for the few cases of yellow fever reported. * * * Inclosed you will find a report from Santa Cruz from January 1 up to date.

At Manzanillo the smallpox epidemic still continues its deadly work—47 deaths are reported for the last two weeks from the disease.

The following vessels have been granted bills of health by me during the present week: March 23, schooner *E. Goodwin*, American, bound to Philadelphia, and steamship *Tafna*, British, bound to Philadelphia; March 26, steamship *Remus*, German, bound to Philadelphia, and steamship *Panama*, Spanish, bound to New York; March 28, steamship *Santiago*, American, bound to New York (visé).

Respectfully, HENRY S. CAMINERO, M. D.,
Sanitary Inspector, U. S. M. H. S.

JAPAN.

One death from plague on the steamship Gaelic.

WASHINGTON, *April 4, 1896.*

SIR: I have the honor to inclose for such action as you may deem proper a copy of a telegram, received on the 2d instant, from our consul-general at Kanagawa, reporting a death from plague on the steamship *Gaelic*, which sailed for San Francisco from Yokohama on the 31st ultimo.

I have the honor to be, sir, your obedient servant,

RICHARD OLNEY.

Hon. SECRETARY OF THE TREASURY.

[Inclosure.]

YOKOHAMA, *April 2, 1896.*

Chinese passenger left *Gaelic* here, died next day, of plague. *Gaelic* sailed 31st for San Francisco via Honolulu.

N. W. MCIVOR,
United States Consul-General.

Hon. SECRETARY OF STATE.

WASHINGTON, *April 6, 1896.*

Passed Assistant Surgeon M. J. ROSENAU, *Angel Island Quarantine, California:*

Chinese passenger left steamer *Gaelic* at Yokohama, and died next day with plague. *Gaelic* sailed 31st for San Francisco via Honolulu. Inform health authorities and quarantine officer.

WYMAN,
Surgeon-General U. S. M. H. S.

No further cases of cholera in Japan.

YOKOHAMA, *March 15, 1896.*

SIR: I have the honor to notify you that since the date of my last report upon the subject, no new case of cholera has been reported by the home department. The Japanese Government has not yet enforced a complete quarantine against Hongkong, but is carrying out a rigid system of inspection of vessels.

I am, sir, very respectfully,

STUART ELDRIDGE, M. D.,
Sanitary Inspector, U. S. M. H. S.

Inspection of vessels at Yokohama.

YOKOHAMA, *March 15, 1896.*

SIR: I have the honor to report that, since January 25, the date of my last return, I have inspected vessels as follows, all being free from any suspicion of infectious disease, viz:

February 3, bark *Behring*, bound for San Francisco; February 4, steamship *City of Peking*, bound for San Francisco; steamship *Tacoma*, bound for Tacoma, and steamship *Dunferline*, bound for Port Townsend; February 7, steamship *Asloun*, bound for Portland, Oreg.; February 10, ship *W. H. Macy*, bound for New York; February 11, steamship *Belgic*, bound for San Francisco; February 18, steamship *China*, bound for San Francisco; February 19, steamship *Glenartney*, bound for New York; February 21, steamship *Victoria*, bound for Tacoma; February 28, ship *St. Paul*, bound for New York; March 2, steamship *Mount Lebanon*, bound for Portland, Oreg.; March 3, steamship *Peru*, bound for San Francisco; March 14, ship *Lucille* and steamship *Radnorshire*, bound for New York; March 15, steamship *Coptic*, bound for San Francisco.

I am, sir, very respectfully,

STUART ELDRIDGE, M. D.,
Sanitary Inspector, U. S. M. H. S.

Report on infectious diseases in Japan during 1895.

YOKOHAMA, *March 15, 1896.*

SIR: I have the honor to forward the following abstract of the preliminary report of the home department upon infectious disease in Japan during 1895:

Cholera, cases, 53,999; deaths, 38,500; per cent of mortality, 71.27. Dysentery, cases, 50,977; deaths, 12,218; per cent of mortality, 23.94. Variola, cases, 1,278; deaths, 268; per cent of mortality, 20.18. Typhoid, cases, 36,678; deaths, 8,331; per cent of mortality, 22.71. Typhus, cases, 184; deaths, 49; per cent of mortality, 26.63. Diphtheria, cases, 6,100; deaths, 3,036; per cent of mortality, 49.777.

In regard to the foregoing, I beg to remark, that the epidemic of cholera during last year was distinguished by a death rate much higher than is usual from this disease in Japan. A mortality of 71 per cent has, I think, been but rarely met with in temperate climates, save in special conditions and within a limited territory, heretofore.

The epidemic dysentery of Japan, which first became noticeable some six or seven years ago, and has steadily progressed, has now become of grave importance. The mortality of the disease is, as you will notice, about that of tropical dysentery, with which, however, at least as regards the amœbic form of the latter, it does not seem to be identical. So far, dysentery prevails chiefly in the southern half of the Empire, although it is steadily, if slowly, advancing to the northward.

That in a country which, only twenty-five years ago, was annually scourged by smallpox (it is difficult to find a Japanese of forty or more years who has not suffered from variola in his youth), possessing so large a population, whose habits are most favorable for the transmission of this disease, so few cases of it should occur, affords new evidence of the value of vaccination, were such needed. Not only primary vaccination but re-vaccination is now almost universal in Japan, the people themselves having the utmost confidence in it; except in emergencies, only bovine virus being employed, which is supplied at a nominal cost by establishments under strict official supervision.

The prevalence of typhoid fever is, as elsewhere, chiefly in the towns and ascribable to impure water, a cause now rapidly in process of elimination by the construction of waterworks, at least in the larger cities.

Typhus fever is, at all times, a rare malady in Japan, and even the favorable conditions existing during and immediately after the recent war have had little effect in developing it.

Diphtheria, although it may have before existed in Japan, was first distinctly recognized about 1875, since which time it appears to have gradually, though slowly, increased in frequency. However, this disease in Japan can not, even now, be considered as of so malignant a character as when occurring in Europe and America. The reported proportion of deaths is large, but it must be remembered that, as a rule, only the severer cases are recognized and that, perhaps in the majority of instances, treatment is by no means of the best, or thoroughly applied. The comparative mildness of the type of the disease is, I think, shown by the facts, among others, that general septic infection is infrequent, post-diphtheritic paralysis almost unknown, and that epidemic tendency, even to the extent of the attack of more that one member of the same household, is rarely met with.

It will be noticed that scarlet fever does not appear in the list of infectious diseases reported upon. This is due to the excessive rarity of the malady in the island empire, where, though it is not absolutely unknown, a lifetime may be spent in the practice of medicine without encountering a single case, and where, even when it occurs, the type is almost invariably of the mildest and the appearance of the disease in epidemic form unheard of.

I am, sir, very respectfully,

STUART ELDRIDGE, M. D.,
Sanitary Inspector, U. S. M. H. S.

MEXICO.

Denial of report of existence of yellow fever in Vera Cruz.

VERA CRUZ, MEXICO, *March 27, 1896.*

SIR: There were rumors this morning that yellow fever had appeared in this city, but I am glad to say that such is not the truth. I have visited the hospitals and inquired of the leading physicians, and am assured that there is not a case. * * *

Last year the papers were full of reports about this disease, when the fact was that there was less of it than for several years previous. I have facilities for knowing, and report to you weekly the condition of this port, and am sure these reports are reliable. * * *

Very respectfully, CHARLES SCHAEFER,
United States Consul.

TURKEY.

Sanitary report.

(Report No. 148.)

CONSTANTINOPLE, *March 11, 1896.*

The epidemic of influenza still prevails in Constantinople. Many cases of diphtheria do exist, also, and I have seen a few cases of whooping cough. One or two deaths from smallpox occur every week. There have been also some deaths from puerperal fever.

At Duzjéh, in the vilayet of Bolu (Asia Minor), a disease broke out (as it is officially announced) from which several deaths took place. When further details arrive I will report them.

In Alexandria (Egypt) no cholera case has been registered since the 3d inst. As a consequence of the news, the international sanitary board has abolished the forty-eight hours' quarantine to which the passengers coming from the latter town were submitted. They have to undergo only a medical visit, disinfection of their wearing apparel, and twenty-four hours of observation.

SPIRIDION C. ZAVITZIANO.

STATISTICAL REPORTS.

BAHAMAS—*Green Turtle Cay—Abaco.*—Two weeks ended March 26, 1896. Estimated population, 3,900. No deaths.

BERMUDA.—Week ended March 27, 1896. Estimated population, 15,013. One death. No death from contagious disease.

CANADA—*Ontario—Hamilton.*—Month of March, 1896. Estimated population, 50,000. Total deaths, 60, including phthisis pulmonalis, 7; enteric fever, 2; scarlet fever, 1, and diphtheria, 2.

CUBA—*Habana.*—Under date of April 4, 1896, the United States sanitary inspector reports as follows:

There were 644 deaths in this city during the month of March, 1896. Four of those deaths were caused by yellow fever, 16 by enteric fever, 20 by so-called pernicious fever, 3 by paludal fever, 4 by diphtheria, 38 by enteritis, 1 by dysentery, 14 by smallpox, 3 by measles, 3 by glanders, 36 by pneumonia, and 27 by grippe.

During the week ended April 2, 1896, there were 165 deaths, two of which were caused by yellow fever, 2 by enteric fever, 5 by so-called pernicious fever, 1 by paludal fever, 11 by enteritis, 1 by dysentery, 3 by smallpox, 1 by glanders, 8 by pneumonia, and 10 by grippe. The 2 deaths by yellow fever during the week occurred in the military hospital. There are strong reasons for believing that some of the deaths which are reported as having been caused by pernicious fever were in reality caused by yellow fever.

FRANCE—*Nantes.*—Month of February, 1896. Estimated population, 128,000. Total deaths, 234, including phthisis pulmonalis, 43; enteric fever, 7; diphtheria, 1, and measles, 1.

GREAT BRITAIN—*England and Wales.*—The deaths registered in 33 great towns of England and Wales during the week ended March 31 correspond to an annual rate of 19.2 a thousand of the aggregate population, which is estimated at 10,860,971. The lowest rate was recorded in Gateshead, viz, 12.7, and the highest in Norwich, viz, 26.9 a thousand.

London.—One thousand six hundred and three deaths were registered during the week, including measles, 129; scarlet fever, 16; diphtheria, 52; whooping cough, 102; enteric fever, 5, and diarrhea and dysentery, 17. The deaths from all causes corresponded to an annual rate of 18.8 a thousand. In greater London 2,042 deaths were registered, corresponding to an annual rate of 17.3 a thousand of the population.

In the "outer ring" the deaths included 12 from diphtheria, 36 from measles, 6 from scarlet fever, 14 from whooping cough, and 8 from diphtheria.

Ireland.—The average annual death rate represented by the deaths registered during the week ended March 21 in the 16 principal town districts of Ireland was 24.3 a thousand of the population. The lowest rate was recorded in Armagh, viz, 00, and the highest in Kilkenney, viz, 42.5 a thousand. In Dublin and suburbs 170 deaths were registered, including scarlet fever, 1; enteric fever, 1; whooping cough, 2, and diphtheria, 3.

Scotland.—The deaths registered in 8 principal towns during the week ended March 21 corresponded to an annual rate of 19.6 a thousand of the population, which is estimated at 1,518,347. The lowest mortality was recorded in Paisley, viz, 10.7, and the highest in Perth, viz, 27.4 a thousand. The aggregate number of deaths registered from all causes was 572, including measles, 13; scarlet fever, 4; diphtheria, 4, and whooping cough, 29.

NOVA SCOTIA—*Windsor.*—Month of March, 1896. Estimated population, 3,000. Total deaths, 3. No deaths from contagious diseases.

RUSSIA—*Riga.*—Month of January, 1896. Estimated population, 215,000. Total deaths, 387, including phthisis pulmonalis, 53; enteric fever, 7; scarlet fever, 18; diphtheria, 7; measles, 6; and whooping cough, 5.

SPAIN—*Barcelona.*—Month of February, 1896. Estimated population, 440,000. Total deaths, 967, including smallpox, 41; phthisis pulmonalis, 100; enteric fever, 23, and diphtheria, 40.

SWITZERLAND—*Lucerne.*—Month of February, 1896. Estimated population, 23,000. Total deaths, 30, including 1 from diphtheria.

WEST INDIES—*St. Thomas.*—Year of 1895. Estimated population, 12,019. Total deaths, 1,217, including 5 from diphtheria.

MORTALITY TABLE, FOREIGN CITIES.

Cities.	Week ended.	Estimated population.	Total deaths from all causes.	Deaths from—								
				Cholera.	Yellow fever.	Smallpox.	Typhus fever.	Enteric fever.	Scarlet fever.	Diphtheria.	Measles.	Whooping cough.
Acapulco	Mar. 22	5,000	16	.....	.....	1	.....	.....	.....	.....	.....	.....
Aix la Chapelle	Mar. 14	110,777	48	.....	.....	.....	.....	.....	.....	1	.....	.....
Amherstburg	Mar. 28	2,300	2	.....	.....	.....	.....	.....	.....	.....	.....	.....
Amsterdam	Mar. 21	456,357	166	.....	.....	.....	.....	1	1	5	.....	3
Antwerp	Mar. 7	262,065	103	.....	.....	.....	.....	4	.....	1	3	3
Do	Mar. 14	262,065	101	.....	.....	.....	.....	2	.....	1	1	1
Belfast	Mar. 21	277,354	144	.....	.....	.....	.....	2	4	.....	3	9
Belleville	Mar. 20	10,318	5	.....	.....	.....	.....	2	.....	.....	.....	.....
Birmingham	Mar. 21	496,751	210	.....	.....	.....	.....	1	2	6	13	6
Bologna	Mar. 14	149,440	90	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do	Mar. 21	149,440	76	.....	.....	.....	.....	.....	.....	1	.....	.....
Bremen	Mar. 14	142,000	39	.....	.....	.....	.....	.....	.....	3	.....	.....
Brussels	do	507,985	183	.....	.....	.....	.....	1	.....	3	2	.....
Budapest	Mar. 11	600,000	.....	.....	.....	.....	.....	4	.....	5	5	.....
Calcutta	Feb. 22	681,560	536	58	.....	1	.....	.....	.....	.....	1	2
Callao	Feb. 23	25,000	27	.....	.....	3	.....	.....	.....	.....	.....	.....
Do	Mar. 1	25,000	25	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do	Mar. 8	25,000	29	.....	.....	1	.....	.....	.....	.....	.....	1
Cardiff	Mar. 14	162,690	64	.....	.....	.....	.....	.....	.....	1	.....	1
Do	Mar. 21	162,690	47	.....	.....	.....	.....	.....	.....	.....	.....	5
Catania	Mar. 17	120,000	56	.....	.....	.....	1	1	1	.....	.....	.....
Chatham	Mar. 28	9,052	3	.....	.....	.....	.....	.....	.....	1	.....	.....
Christiania	Mar. 21	174,717	63	.....	.....	.....	.....	.....	.....	.....	.....	2
Cienfuegos	Mar. 29	23,000	23	.....	.....	.....	.....	2	.....	.....	.....	.....
Coaticook	Mar. 28	2,500	0	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cognac	Mar. 21	17,500	3	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cologne	Mar. 14	322,658	145	.....	.....	.....	.....	.....	1	.....	10	2
Copenhagen	Mar. 7	333,714	138	.....	.....	.....	.....	.....	1	.....	.....	.....
Do	Mar. 14	333,714	113	.....	.....	.....	.....	.....	1	1	.....	3
Demerara	Feb. 8	53,176	44	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do	Feb. 15	53,176	47	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do	Feb. 22	53,176	55	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do	Feb. 29	53,176	48	.....	.....	.....	.....	.....	.....	.....	.....	.....
Dresden	Mar. 14	334,066	122	.....	.....	.....	.....	.....	.....	1	1	1
Dublin	do	350,000	190	.....	.....	.....	.....	.....	1	.....	.....	.....
Do	Mar. 21	350,000	170	.....	.....	.....	.....	.....	.....	.....	.....	.....
Dundee	do	161,620	66	.....	.....	.....	.....	.....	.....	1	1	1
Dusseldorf	Mar. 14	175,861	53	.....	.....	.....	.....	.....	.....	1	.....	.....
Edinburgh	Mar. 21	276,514	95	.....	.....	.....	.....	.....	.....	1	2	1
Flushing	do	16,200	6	.....	.....	.....	.....	.....	.....	.....	.....	.....
Frankfort on the Main	do	228,750	82	.....	.....	.....	.....	.....	.....	.....	.....	1
Genoa	Mar. 14	182,582	98	.....	.....	.....	.....	1	.....	1	.....	.....
Do	Mar. 21	182,582	79	.....	.....	.....	.....	1	.....	1	.....	.....
Ghent	do	157,214	73	.....	.....	.....	.....	.....	1	.....	.....	.....
Gibraltar	Mar. 15	25,800	9	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do	Mar. 22	25,800	9	.....	.....	.....	.....	1	.....	.....	.....	.....
Girgenti	Mar. 14	24,428	15	.....	.....	.....	.....	.....	.....	.....	.....	.....
Glasgow	Mar. 21	705,052	277	.....	.....	.....	.....	5	2	1	10	20
Gothenburg	Mar. 7	111,234	43	.....	.....	.....	.....	.....	1	.....	.....	.....
Do	Mar. 14	111,234	35	.....	.....	.....	.....	.....	2	1	.....	.....
Guayaquil	Mar. 20	50,000	71	.....	.....	5	.....	41	.....	.....	1	.....
Halifax	Mar. 28	38,700	18	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hamburg	Mar. 21	625,552	222	.....	.....	.....	.....	2	1	.....	2	5
Hanover	Mar. 7	526,212	60	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hongkong	Feb. 22	232,662	(a)	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do	Feb. 29	232,662	(b)	.....	.....	.....	.....	1	.....	.....	.....	.....
Honolulu	Mar. 7	28,000	13	.....	.....	.....	.....	.....	.....	.....	.....	2
Do	Mar. 14	28,000	17	.....	.....	.....	.....	.....	.....	.....	1	2
Iquique	Feb. 15	33,106	39	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do	Feb. 22	33,106	24	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do	Feb. 29	33,106	30	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do	Mar. 7	33,106	24	.....	.....	.....	.....	.....	.....	.....	.....	.....
Kehl, Strasburg	do	141,272	60	.....	.....	.....	.....	.....	.....	2	.....	.....
Kingston, Canada	Apr. 3	35,000	9	.....	.....	.....	.....	.....	.....	.....	.....	.....
Konigsberg	Mar. 21	171,700	.....	.....	.....	.....	.....	.....	2	1	5	.....
Leeds	do	395,546	139	.....	.....	.....	.....	3	.....	1	1	7
Leghorn	do	103,434	42	.....	.....	.....	.....	.....	.....	1	.....	.....
Leith	do	74,110	18	.....	.....	.....	.....	.....	.....	.....	.....	1
Licata	Mar. 14	20,000	11	.....	.....	.....	.....	.....	.....	.....	.....	.....
Liége	Mar. 21	160,848	47	.....	.....	.....	.....	.....	1	.....	.....	.....
Liverpool	do	641,063	274	.....	.....	.....	.....	.....	2	2	17	7
London, Canada	Mar. 28	34,429	4	.....	.....	.....	.....	.....	.....	.....	.....	.....

a Forty-six deaths from plague. *b* Twenty-eight deaths from plague.

MORTALITY TABLE, FOREIGN CITIES—Continued.

Cities.	Week ended.	Estimated population.	Total deaths from all causes.	Deaths from—								
				Cholera.	Yellow fever.	Smallpox.	Typhus fever.	Enteric fever.	Scarlet fever.	Diphtheria.	Measles.	Whooping cough.
Lyons	Mar. 14	200,000	191	.....	.....	.....	.....	1	2	.....	.....	2
Madras	Feb. 28	452,518	257	.....	.....	3	.....	.....	.....	.....	12	.....
Manchester	Mar. 21	531,697	237	.....	.....	.....	.....	.....	8	2	11	.....
Manila	Feb. 8	400,000	86	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do	Feb. 15	400,000	81	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mannheim	Mar. 14	88,400	36	.....	.....	.....	.....	.....	.....	2	.....	.....
Matamoras	Mar. 27	8,000	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mayence	Mar. 21	74,917	29	.....	.....	.....	.....	.....	1	.....	.....	.....
Messina	do	107,000	34	.....	.....	.....	.....	.....	.....	.....	.....	.....
Moscow	Mar. 7	800,000	510	.....	.....	.....	2	1	15	10	6	2
Munich	Mar. 14	406,000	193	.....	.....	.....	.....	.....	.....	2	4	2
Newcastle on Tyne	Mar. 21	212,223	75	.....	.....	.....	.....	.....	1	.....	6	2
Nuremberg	Mar. 7	162,380	74	.....	.....	.....	.....	.....	1	2	1	2
Odessa	Mar. 14	353,000	165	.....	.....	2	.....	.....	1	.....	2	1
Osaka and Hiogo	Mar. 7	158,693	85	.....	.....	.....	.....	1	.....	2	.....	.....
Palermo	Mar. 14	273,000	142	.....	.....	.....	.....	.....	2	1	.....	1
Paris	do	2,424,705	1001	.....	.....	1	.....	3	5	12	14	5
Plymouth	Mar. 21	86,781	28	.....	.....	.....	.....	.....	.....	.....	.....	.....
Prague	Mar. 14	196,377	105	.....	.....	.....	.....	2	2	2	2	.....
Puerto Cortez	Mar. 25	1,856	0	.....	.....	.....	.....	.....	.....	.....	.....	.....
Queenstown	Mar. 14	15,000	3	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do	Mar. 21	15,000	3	.....	.....	.....	.....	.....	.....	.....	.....	.....
Rotterdam	do	201,858	.....	.....	.....	.....	.....	.....	.....	1	.....	.....
Sagua la Grande	Mar. 20	17,536	16	.....	.....	.....	.....	.....	.....	.....	.....	.....
St. Petersburg	Mar. 14	954,400	a731	.....	.....	3	1	34	29	20	35	3
St. Stephens	Mar. 28	3,000	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
St Thomas	Mar. 13	12,019	7	.....	.....	.....	.....	.....	.....	.....	.....	.....
San Juan del Norte	Mar. 21	1,280	0	.....	.....	.....	.....	.....	.....	.....	.....	.....
Schiedam	do	26,233	8	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sheffield	do	347,280	139	.....	.....	.....	.....	.....	1	2	5	5
Sonneberg	Mar. 15	12,150	8	.....	.....	.....	.....	.....	.....	1	.....	.....
Do	Mar. 22	12,150	4	.....	.....	.....	.....	.....	.....	.....	.....	.....
South Shields	Mar. 21	92,773	32	.....	.....	.....	.....	.....	1	.....	.....	.....
Stettin	Mar. 14	140,000	65	.....	.....	.....	.....	.....	1	.....	.....	.....
Stockholm	do	259,304	79	.....	.....	.....	.....	.....	.....	1	.....	2
Stuttgart	Mar. 19	158,378	60	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sunderland	Mar. 21	140,386	50	.....	.....	.....	.....	1	1	.....	5	1
Tegucigalpa	Mar. 14	12,000	3	.....	.....	.....	.....	.....	.....	.....	.....	.....
Trapani	do	43,095	13	.....	.....	.....	.....	.....	.....	.....	.....	.....
Trieste	do	158,314	103	.....	.....	.....	.....	1	3	2	.....	.....
Venice	do	161,636	118	.....	.....	.....	.....	2	.....	.....	8	.....
Vera Cruz	Mar. 26	27,065	28	.....	.....	.....	.....	.....	.....	.....	.....	.....
Warsaw	Feb. 29	535,968	247	.....	.....	3	1	.....	3	2	.....	1
Do	Mar. 7	535,968	227	.....	.....	.....	1	1	2	4	.....	1
Do	Mar. 14	535,968	221	.....	.....	6	1	1	6	4	2	1
Yokohama	Feb. 14	126,685	.....	.....	.....	.....	.....	.....	.....	3	.....	.....
Do	Feb. 21	126,685	.....	.....	.....	.....	.....	2	.....	4	.....	.....
Do	Feb. 28	126,685	.....	.....	.....	.....	.....	.....	.....	1	.....	.....
Zurich	Mar. 14	140,000	51	.....	.....	.....	.....	.....	.....	2	.....	.....

a One death from plague.

By authority of the Secretary of the Treasury:

WALTER WYMAN,

Supervising Surgeon-General U. S. Marine-Hospital Service.